



**FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-247 ISSUE 1
CERTIFICATION TEST REPORT
FOR
Dolphin CT50**

**MODEL NUMBER: CT50L0N
FCC ID: HD5-CT50L0N
IC ID: 1693B-CT50L0N**

**REPORT NUMBER: 15U20259-E10, Revision A
ISSUE DATE: JULY 02, 2015**

Prepared for
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NVLAP LAB CODE 200065-0

Revision History

Issue			
Rev.	Date	Revisions	Revised By
-	06/05/15	Initial Issue	C.S.OOI
A	07/02/15	Revised Section 2	C.S.OOI

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: HONEYWELL INTERNATIONAL INC
HONEYWELL SCANNING & MOBILITY

EUT DESCRIPTION: Dolphin CT50

MODEL: CT50L0N

SERIAL NUMBER: 15099404A2

DATE TESTED: MAY 11 – JUNE 4, 2015

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-247 Issue 1	Pass
INDUSTRY CANADA RSS-GEN Issue 4	Pass

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, KDB 558074 D01 v03r03, ANSI C63.10-2009 for FCC and ANSI C63.10-2013 for IC, RSS-GEN Issue 4, and RSS-247 Issue 1.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street
☐ Chamber A(IC: 2324B-1)	☐ Chamber D(IC: 2324B-4)
☐ Chamber B(IC: 2324B-2)	☐ Chamber E(IC: 2324B-5)
☐ Chamber C(IC: 2324B-3)	☐ Chamber F(IC: 2324B-6)
	☐ Chamber G(IC: 2324B-7)
	☐ Chamber H(IC: 2324B-8)

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://ts.nist.gov/standards/scopes/2000650.htm>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) +
Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 18000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a Dolphin CT50 Mobile Computer (Terminal).

The model CT50L0N shares the same enclosure and circuit board as model CT50LFN. The unlicensed radios (WLAN/BT/NFC) including antenna, are identical between the two units.

Difference is CT50L0N has only unlicensed radio but CT50LFN has unlicensed radio and licensed radio.

After confirming through preliminary radiated emissions that the performance of the CT50LFN data remains representative of this model (CT50L0N), CT50L0N leveraged test data from CT50LFN.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2462	802.11b	16.8	47.86
2412 - 2462	802.11g	15.9	38.90
2412 - 2462	802.11n HT20	14.9	30.90

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, with a maximum gain of 1.7 dBi.

5.4. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

Based on the baseline scan, the worst-case data rates were:

802.11b mode: 1 Mbps

802.11g mode: 6 Mbps

802.11a mode: 6 Mbps

802.11n HT20mode: MCS0

802.11n HT40mode: MCS0

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	PHIHONG	PSA10F-050Q	N/A	N/A
USB CUP Adapter	Honeywell	N/A	N/A	N/A

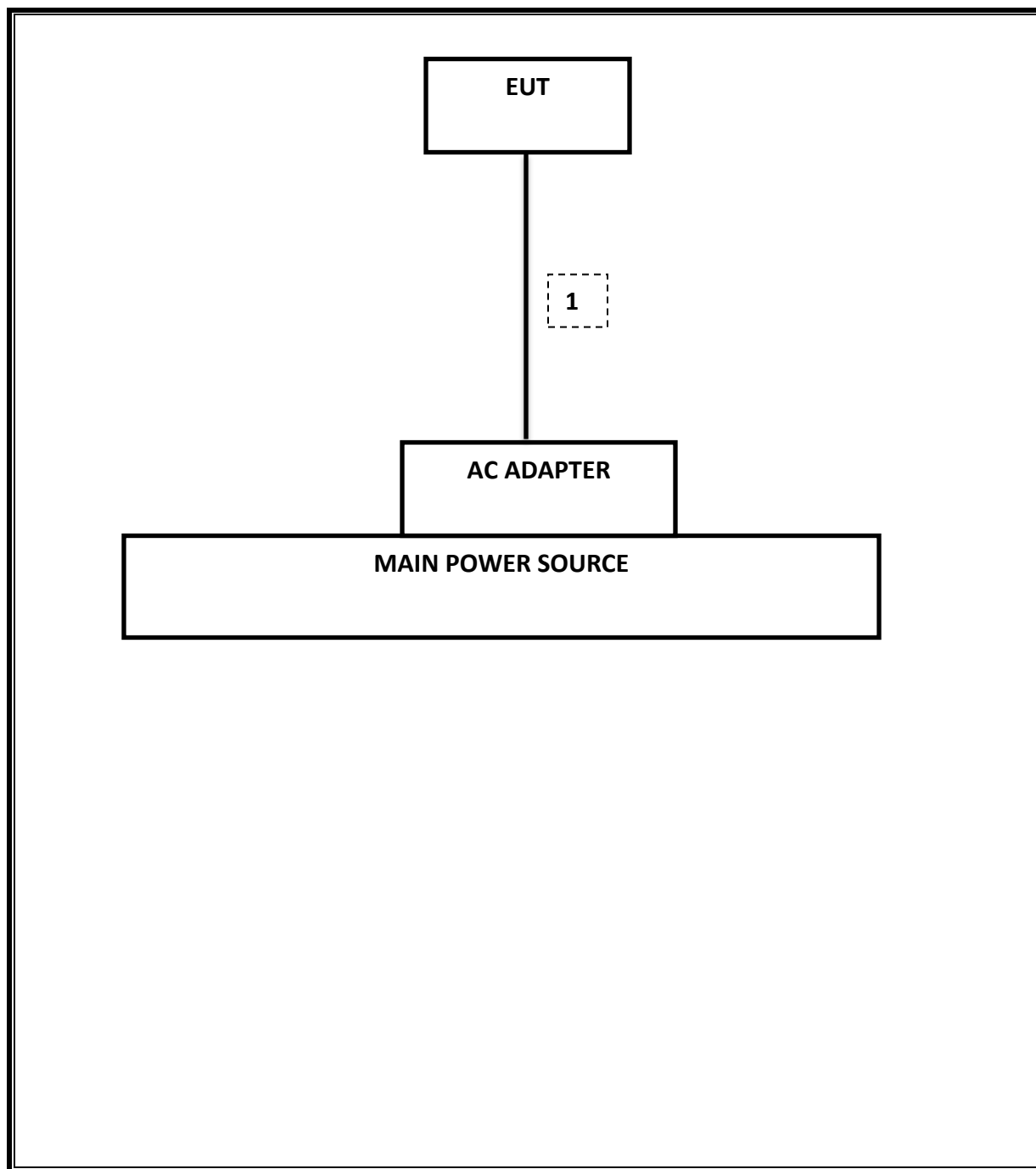
I/O CABLES

N/A

TEST SETUP

The EUT is a stand-alone unit during the tests. Test software exercised the radio card.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List				
Description	Manufacturer	Model	Asset	Cal Due
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	12/20/15
Spectrum Analyzer, 9KHz-40GHz	HP	8564E	C00986	04/01/16
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	1000741	08/13/15
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/18/15
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/15
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/15
Antenna, Horn, 1-18 GHz	ETS	3117	C01022	02/21/16
Antenna, Horn, 18- 26 GHz	ARA	MWH-1826/B	C00946	11/12/15
Antenna, Horn, 26-40 GHz	ARA	MWH-2640	C00891	06/28/15
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	T243	03/06/16
RF Preamplifier, 100KHz -> 1300MHz	HP	8447D	T10	01/06/16
RF Preamplifier, 1GHz - 18GHz	Miteq	NSP4000-SP2	924343	03/23/16
RF Preamplifier, 1GHz - 26.5GHz	HP	8449B	F00351	06/27/15
AC Power Supply, 2,500VA 45-500Hz	Elgar-Ametek	CW2501M	F00013	CNR
RF Preamplifier, 1GHz - 40GHz	Miteq	NSP4000-SP2	C00990	08/20/15
Attenuator / Switch driver	HP	11713A	F00204	CNR
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	T420	04/29/16
High Pass Filter 3GHz	Micro-Tronics	HPS17543	T426	04/29/16
High Pass Filter 6GHz	Micro-Tronics	HPS17542	T424	04/29/16

Test Software List			
Description	Manufacturer	Model	Version
Radiated Software	UL	UL EMC	Version 9.5, 07/22/14
Conducted Software	UL	UL EMC	Version 9.5, 05/17/14
CLT Software	UL	UL RF	Version 1.0, 02/02/15
Antenna Port Software	UL	UL RF	Version 2.1.1.1, 1/20/15

7. MEASUREMENT METHODS

KDB 558074 D01 DTS Meas Guidance v03r02: Measurement Procedure AVGPM-G is used for power and AVGPS-3 is used for power spectral density.

Unwanted emissions within Restricted Bands are measured using traditional radiated procedures.

Band edge emissions within Restricted Bands are measured using RMS with duty cycle factor offset method.

8. SUMMARY TABLE

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Worst Case
15.247 (a)(2)	RSS-247 5.2.1	Occupied Band width (6dB)	>500KHz	Conducted	Pass	8.55 MHz
2.1051, 15.247 (d)	RSS-247 5.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-27.883 dBm
15.247	RSS-247 5.4.4	TX conducted output power	<30dBm		Pass	16.8 dBm
15.247	RSS-247 5.2.2	PSD	<8dBm		Pass	-5.24 dBm
15.207 (a)	RSS-GEN 8.8	AC Power Line conducted emissions	Section 10	Radiated	Pass	25.47 dBuV
15.205, 15.209	RSS-GEN 8.9/7	Radiated Spurious Emission	< 54dBuV/m		Pass	53.54 dBuV/m

9. ANTENNA PORT TEST RESULTS

9.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-247 5.2.1

The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

Reference to KDB 558074 D01 DTS Meas Guidance v03r02: The transmitter output is connected to a spectrum analyzer with the RBW set to 100KHz, the VBW $\geq 3 \times$ RBW, peak detector and max hold.

RESULTS

9.1.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	8.55	0.5
Mid	2437	9.02	0.5
High	2462	9.05	0.5
Worst		8.55	

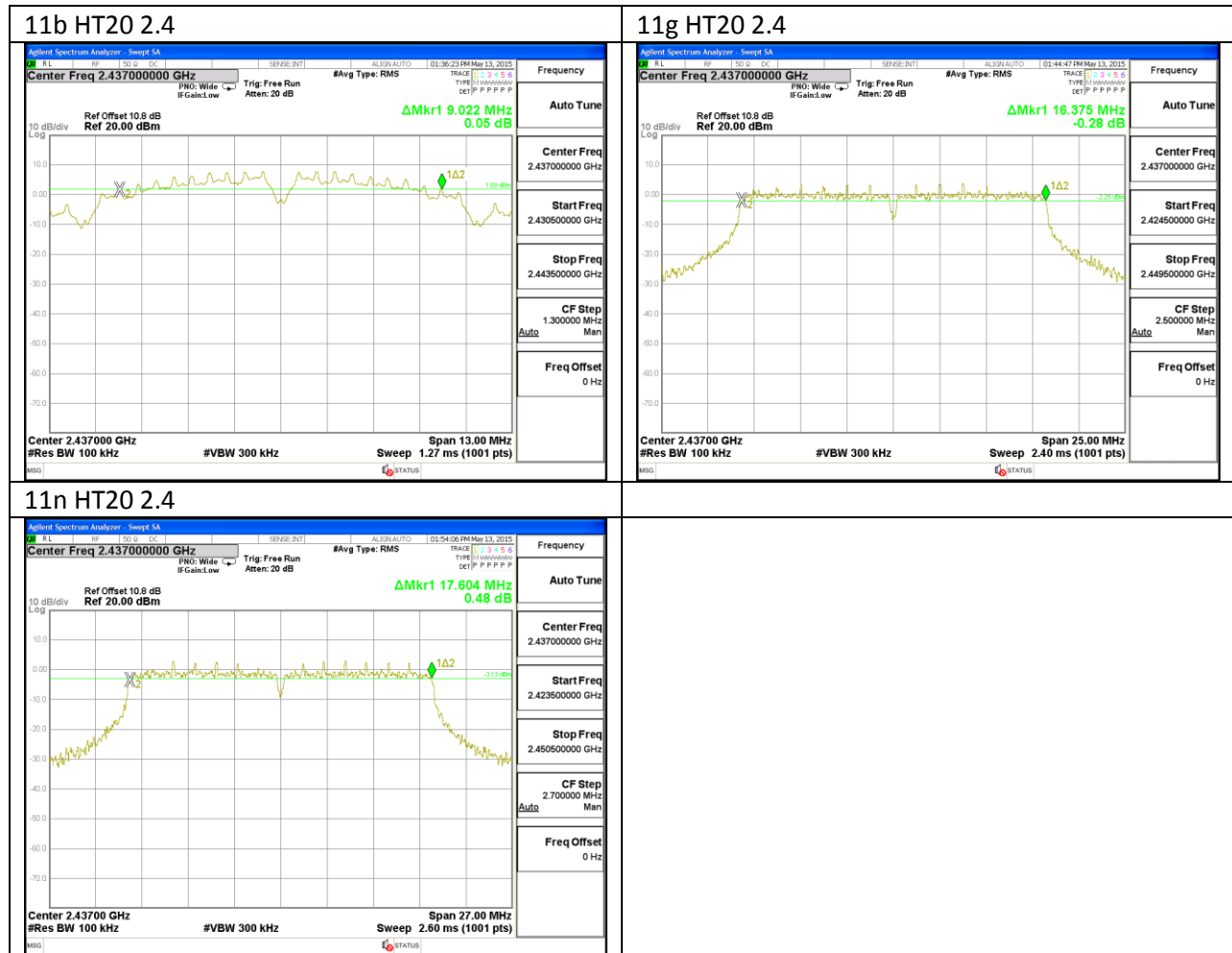
9.1.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.20	0.5
Mid	2437	16.38	0.5
High	2462	15.98	0.5
Worst		15.98	

9.1.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.98	0.5
Mid	2437	17.60	0.5
High	2462	17.26	0.5
Worst		16.98	

9.1.4. 6 dB BANDWIDTH MID CH PLOTS



9.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

9.2.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	13.57
Mid	2437	13.31
High	2462	13.40
Worst		13.57

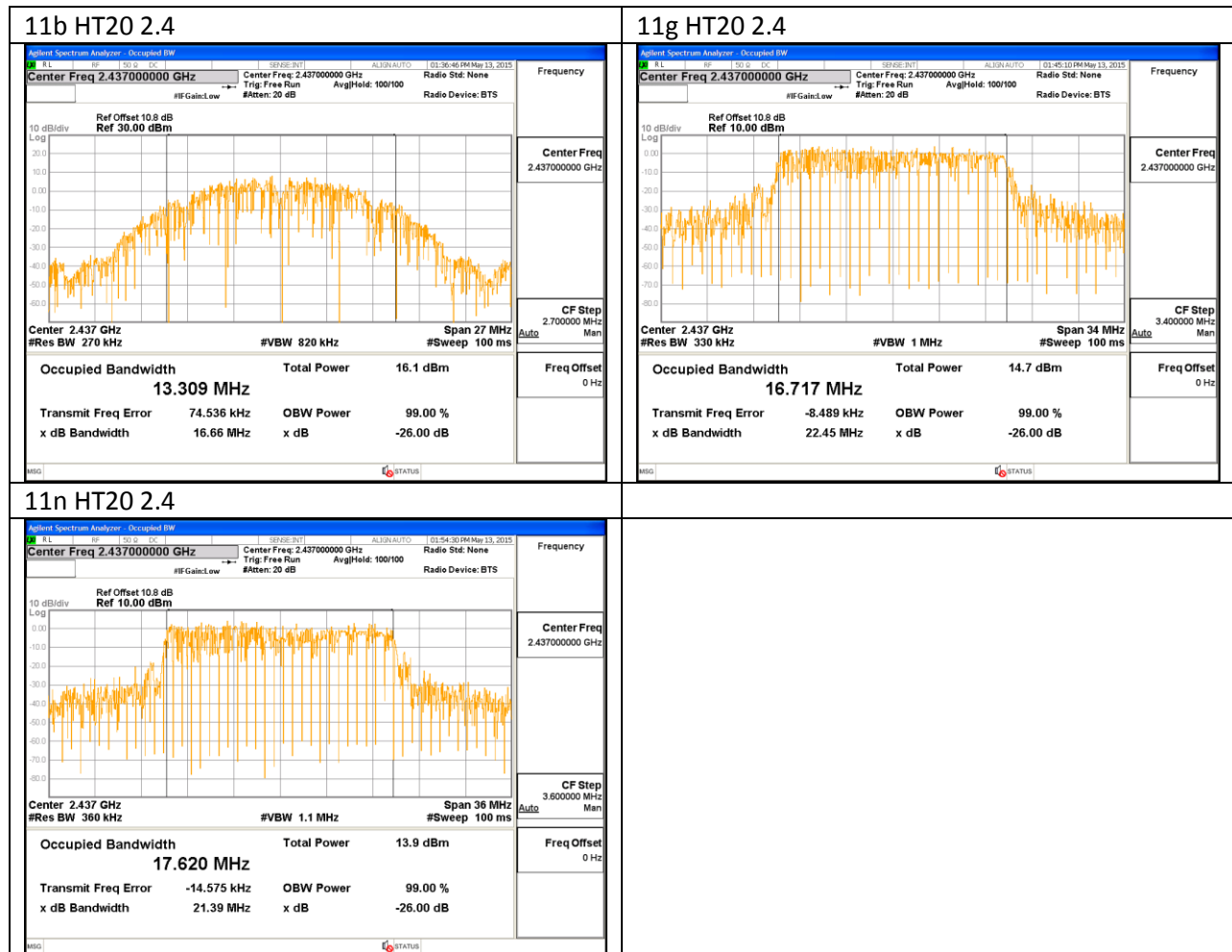
9.2.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.65
Mid	2437	16.72
High	2462	16.48
Worst		16.72

9.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.79
Mid	2437	17.62
High	2462	17.83
Worst		17.83

9.2.4. 99% BANDWIDTH MID CH PLOTS



9.3. OUTPUT POWER

LIMITS

FCC §15.247

IC RSS-247 5.4.4

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

9.3.1. 802.11b MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	1.10	30.00	30	36	30.00
Mid	2437	1.20	30.00	30	36	30.00
High	2462	1.70	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	15.43	15.43	30.00	-14.57
Mid	2437	15.25	15.25	30.00	-14.75
High	2462	15.21	15.21	30.00	-14.79
Worst			15.43		

9.3.2. 802.11g MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	1.10	30.00	30	36	30.00
Mid	2437	1.20	30.00	30	36	30.00
High	2462	1.70	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	11.90	11.90	30.00	-18.10
Mid	2437	11.94	11.94	30.00	-18.06
High	2462	11.96	11.96	30.00	-18.04
Worst			11.96		

9.3.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	1.10	30.00	30	36	30.00
Mid	2437	1.20	30.00	30	36	30.00
High	2462	1.70	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	9.76	9.76	30.00	-20.24
Mid	2437	9.81	9.81	30.00	-20.19
High	2462	9.98	9.98	30.00	-20.02
Worst			9.98		

9.4. PSD

LIMITS

FCC §15.247

IC RSS-247 5.2.2

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

9.4.1. 802.11b MODE IN THE 2.4 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-6.16	8.0	-14.2
Mid	2437	-6.19	8.0	-14.2
High	2462	-6.68	8.0	-14.7

9.4.2. 802.11g MODE IN THE 2.4 GHz BAND

PSD Results

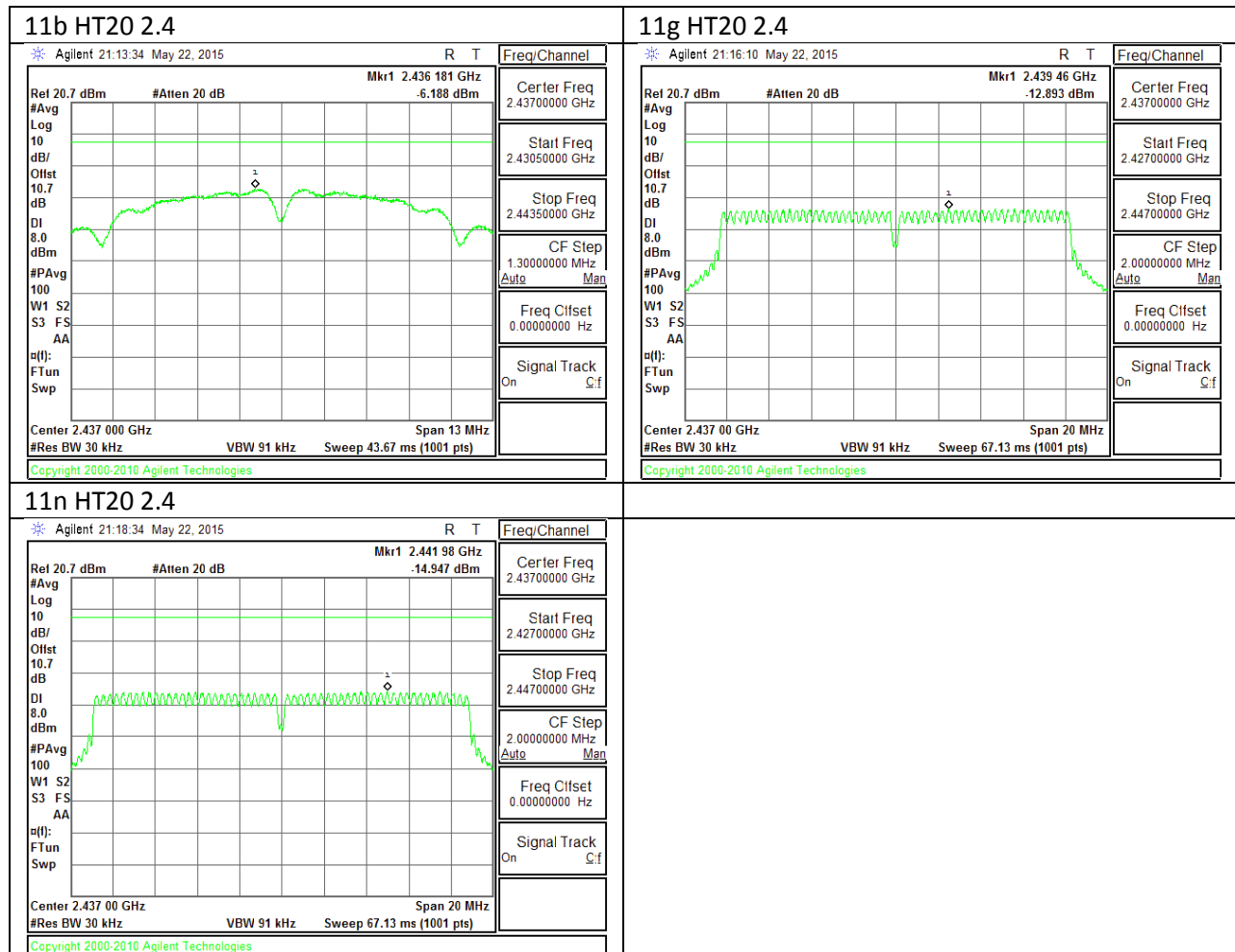
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-11.69	8.0	-19.7
Mid	2437	-12.89	8.0	-20.9
High	2462	-11.24	8.0	-19.2

9.4.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-14.99	8.0	-23.0
Mid	2437	-14.95	8.0	-22.9
High	2462	-13.23	8.0	-21.2

9.4.4. PSD Chain 0 MID CH PLOTS



9.5. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-247 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

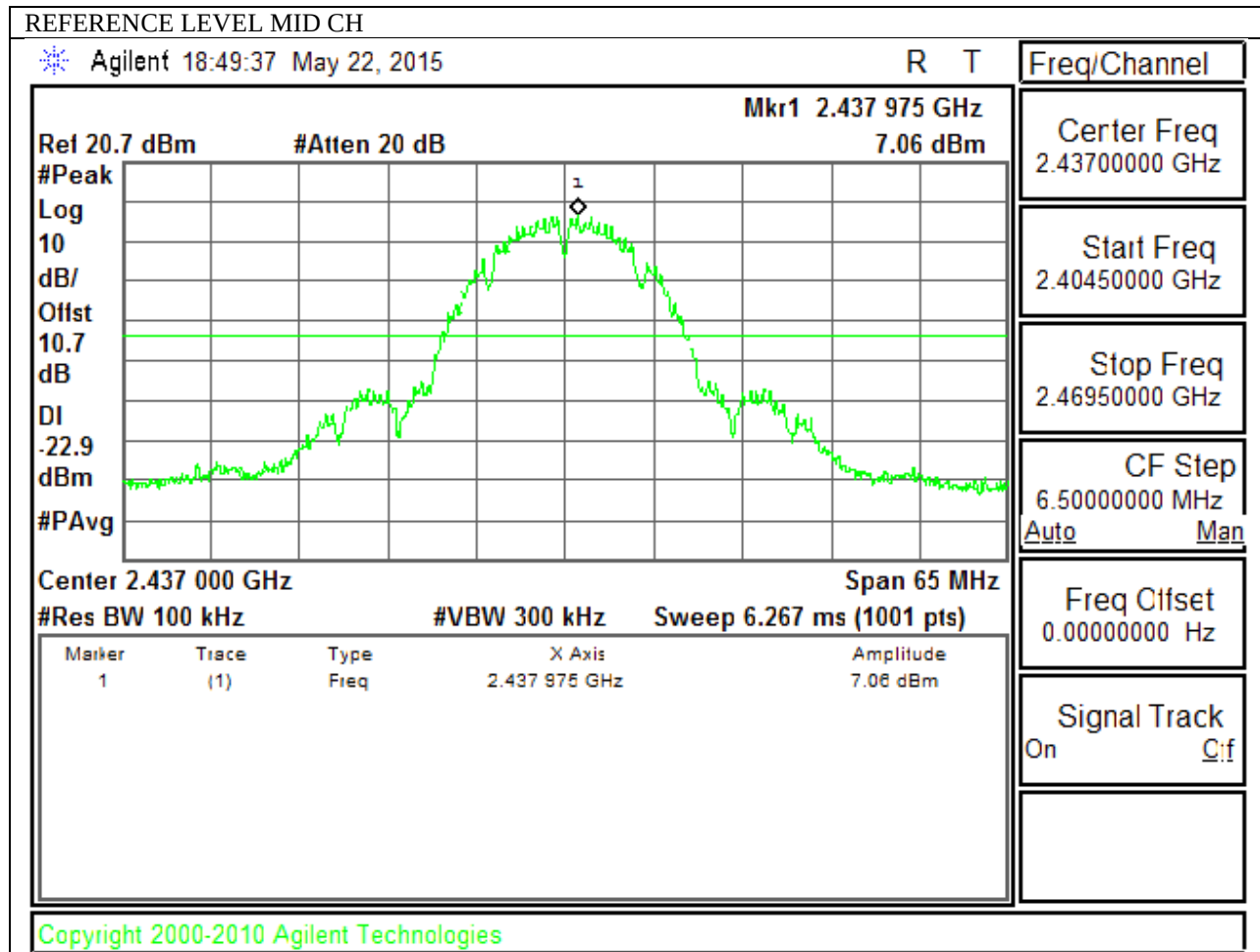
TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

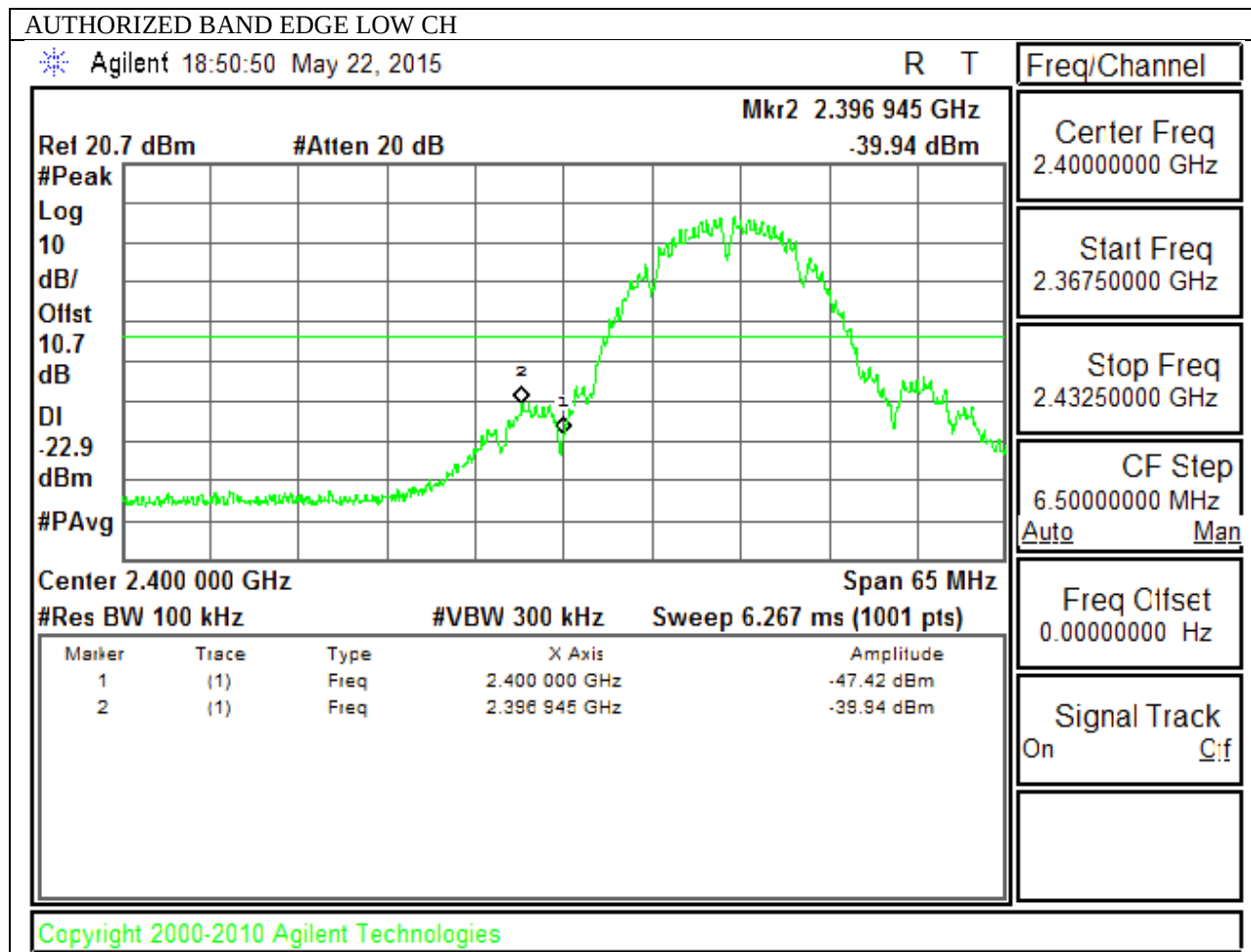
RESULTS

9.5.1. 802.11b MODE IN THE 2.4 GHz BAND

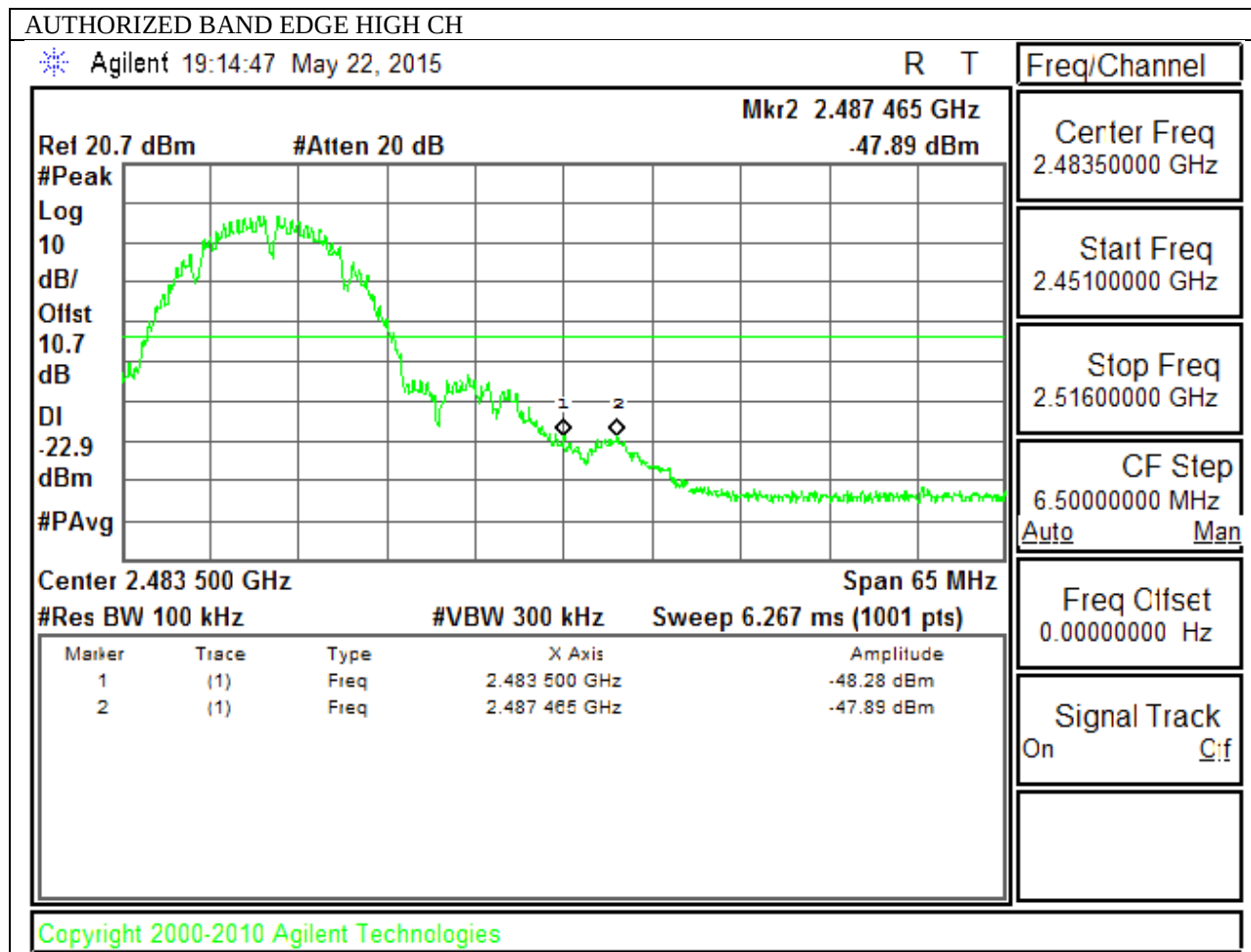
IN-BAND REFERENCE LEVEL



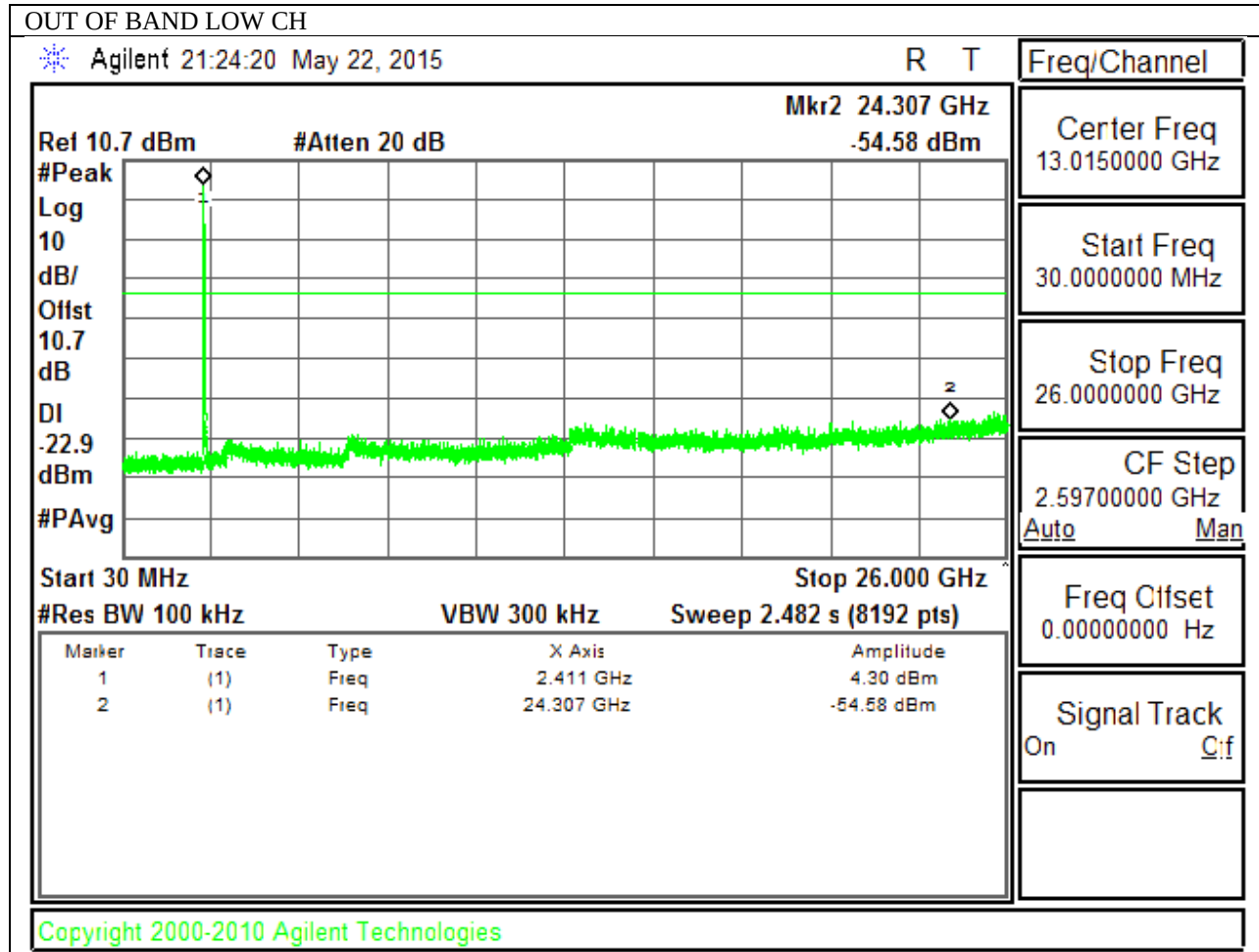
LOW CHANNEL BANDEDGE



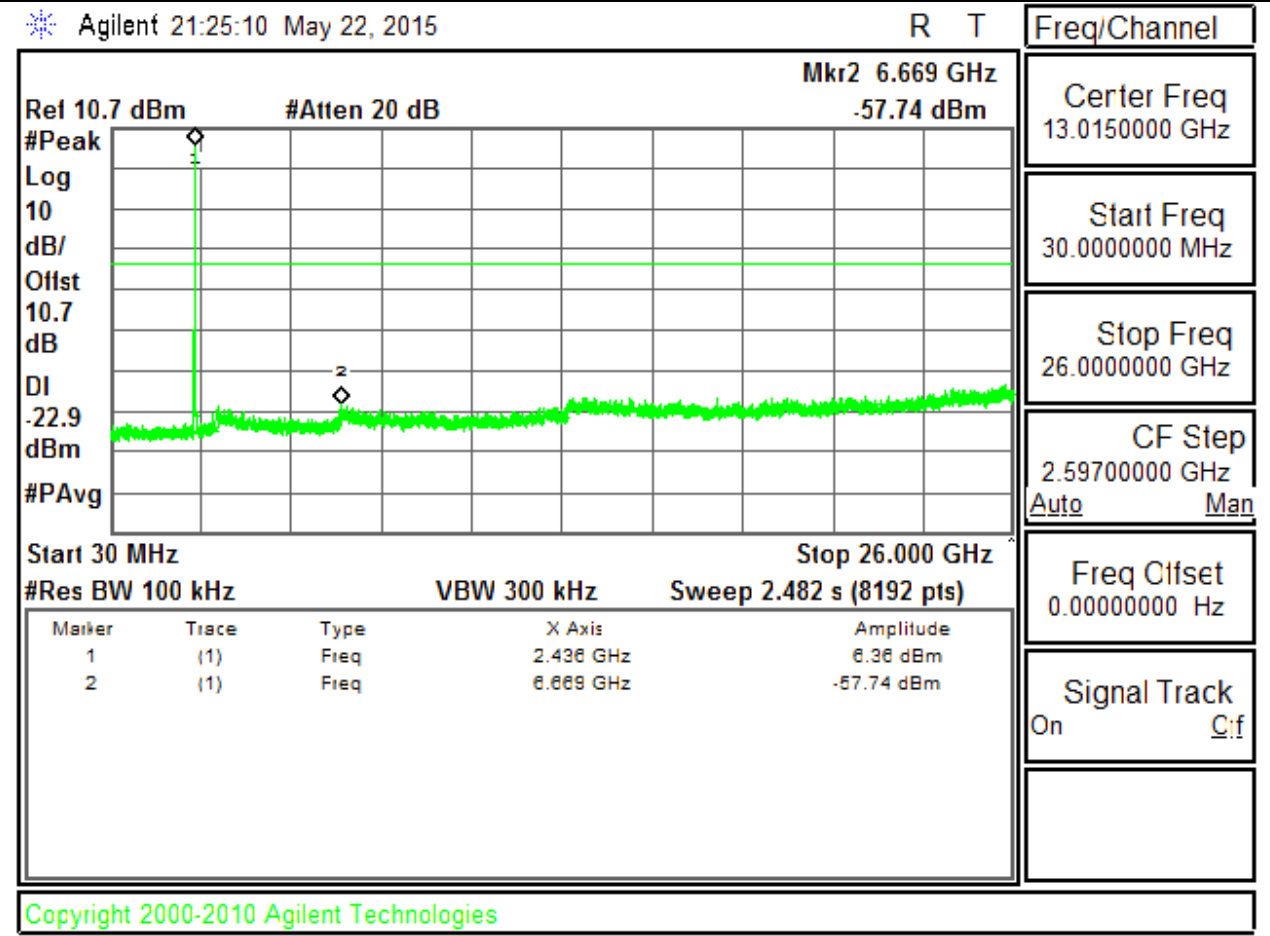
HIGH CHANNEL BANDEGE

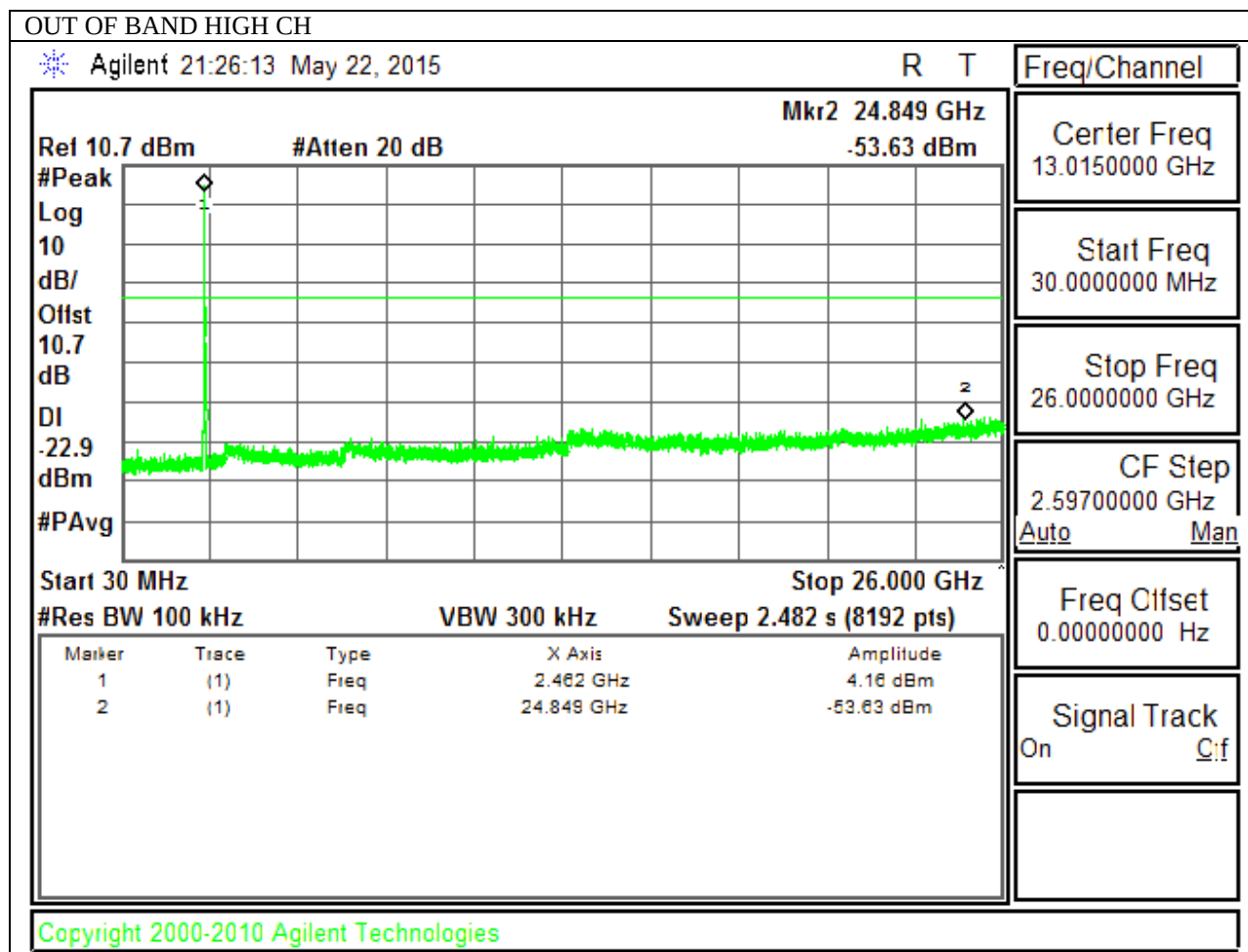


OUT-OF-BAND EMISSIONS



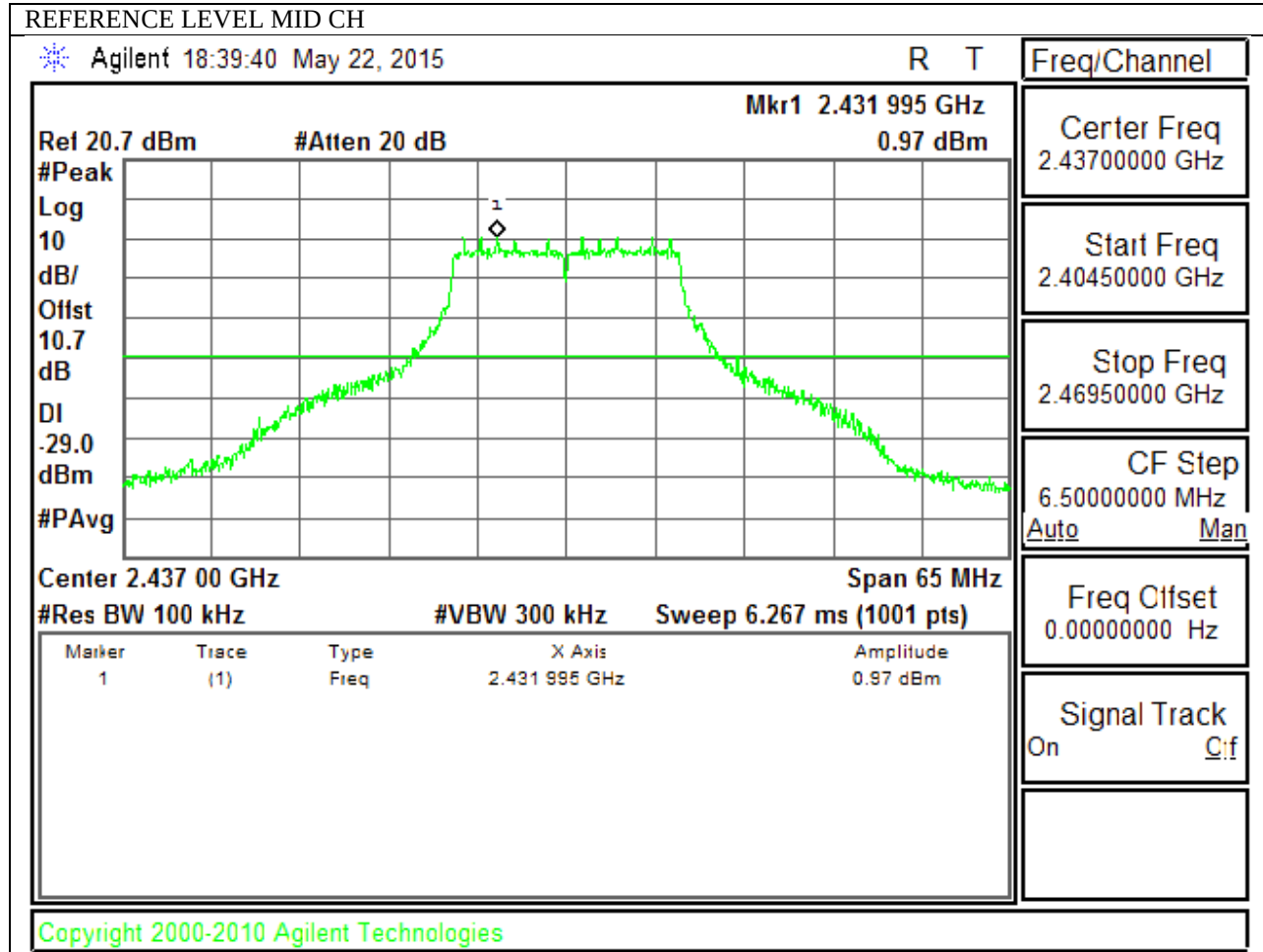
OUT OF BAND MID CH



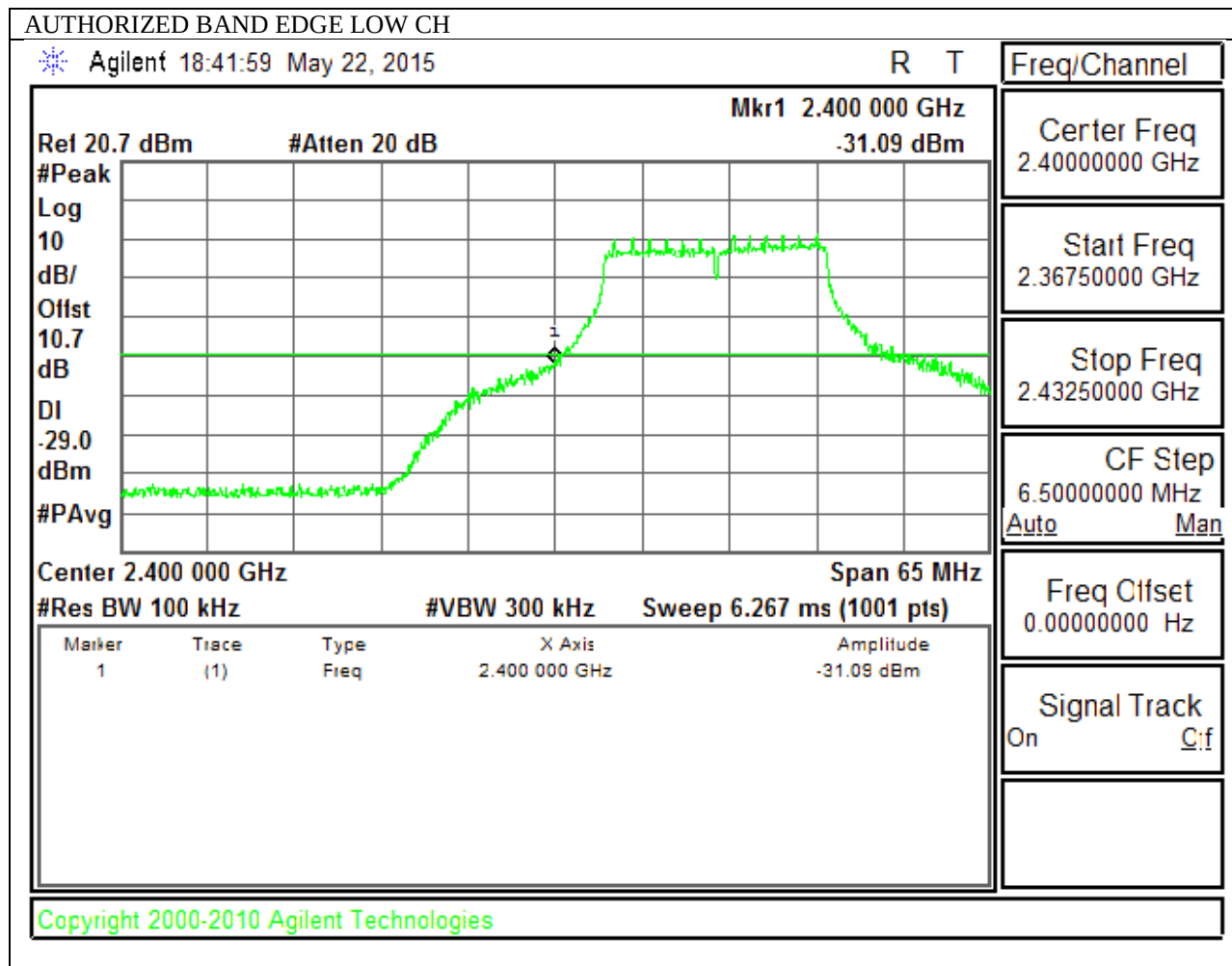


9.5.2. 802.11g MODE IN THE 2.4 GHz BAND

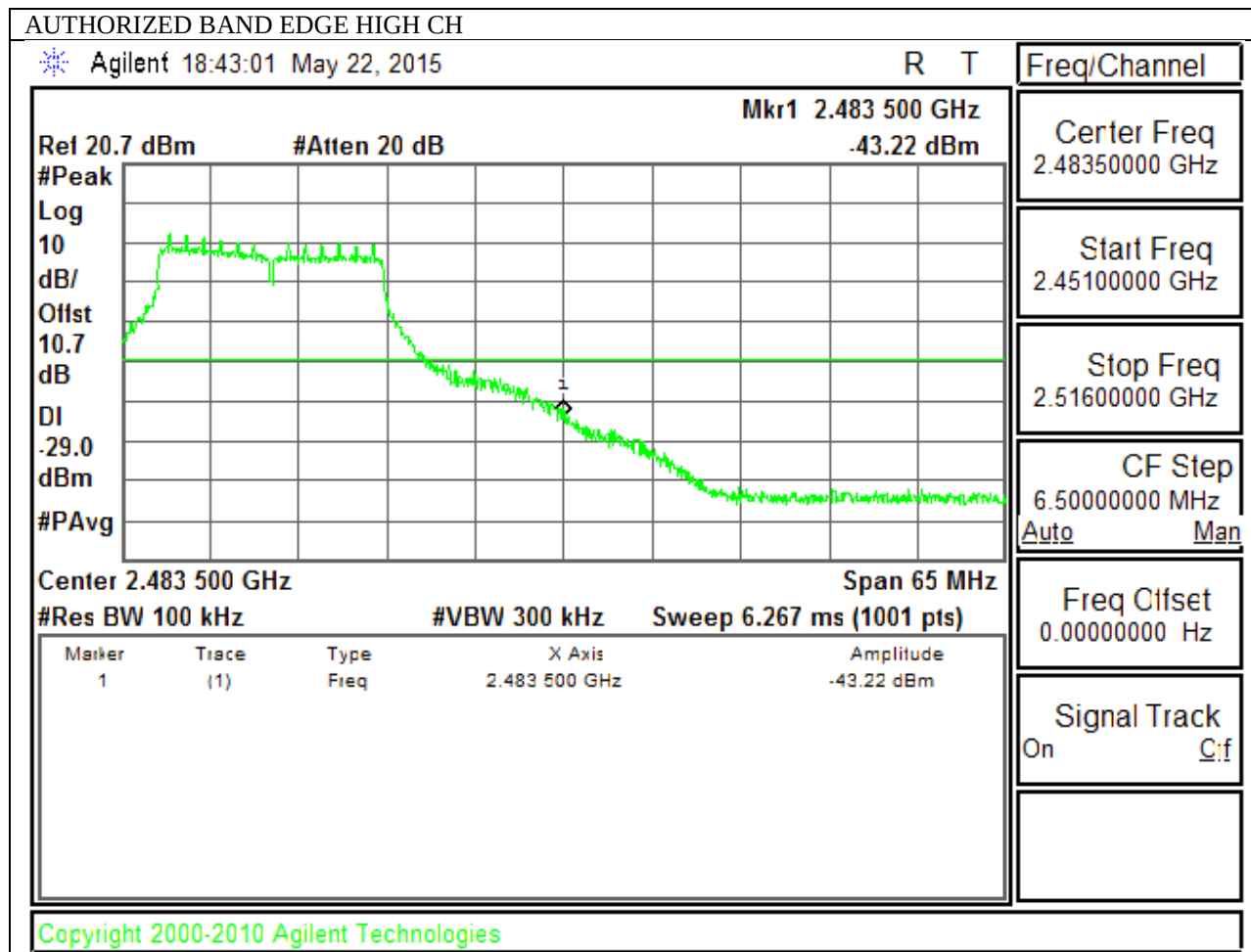
IN-BAND REFERENCE LEVEL



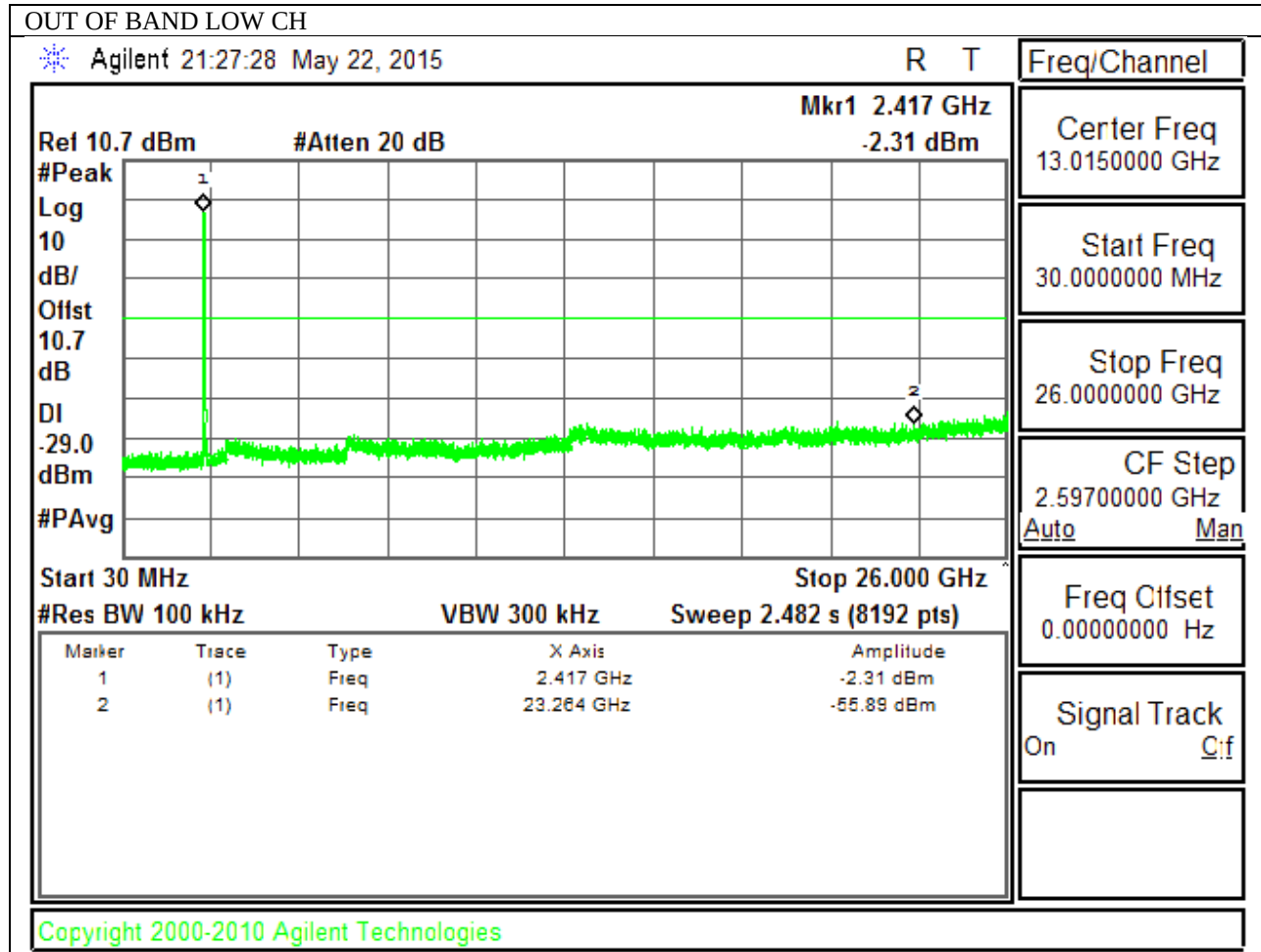
LOW CHANNEL BANDEDGE

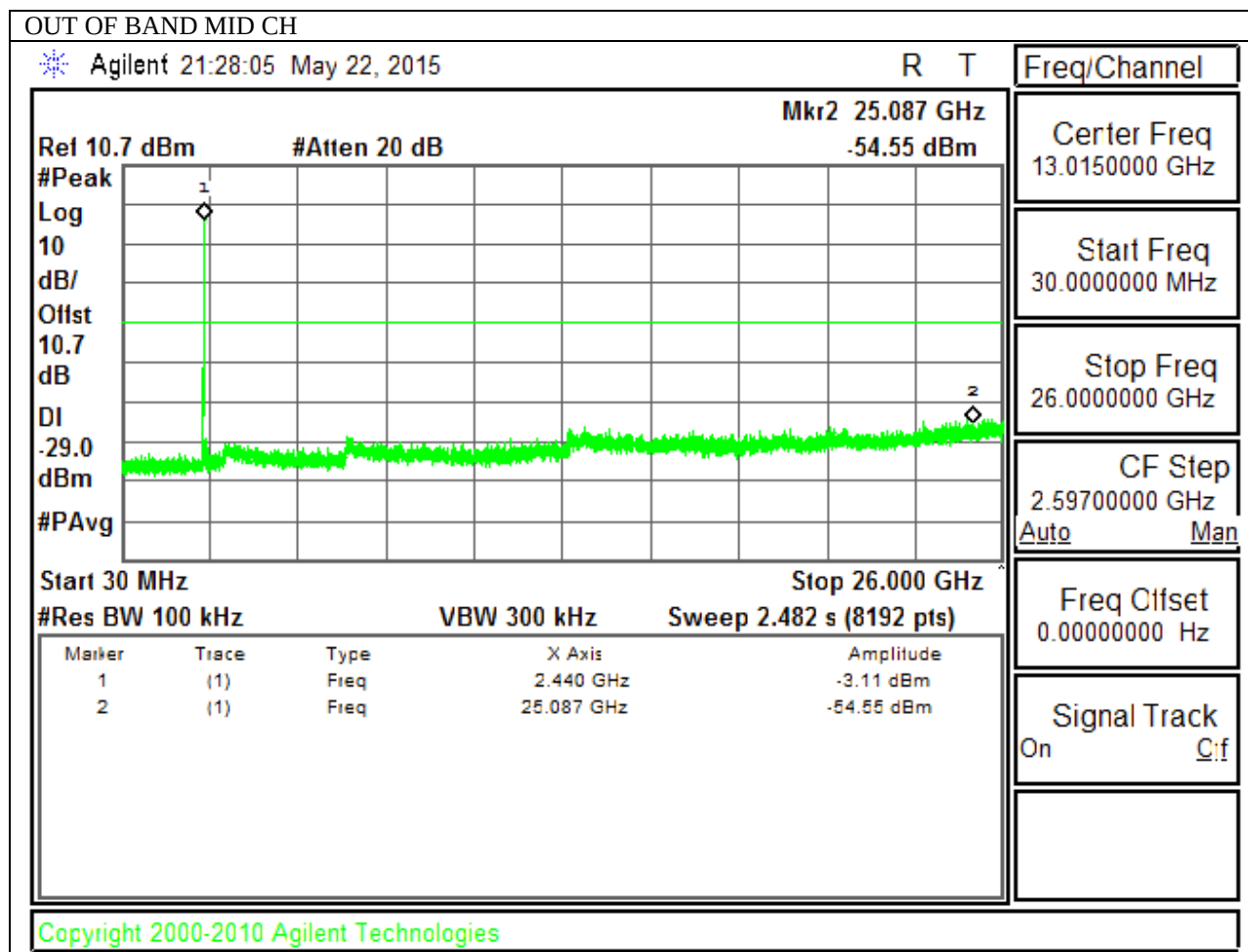


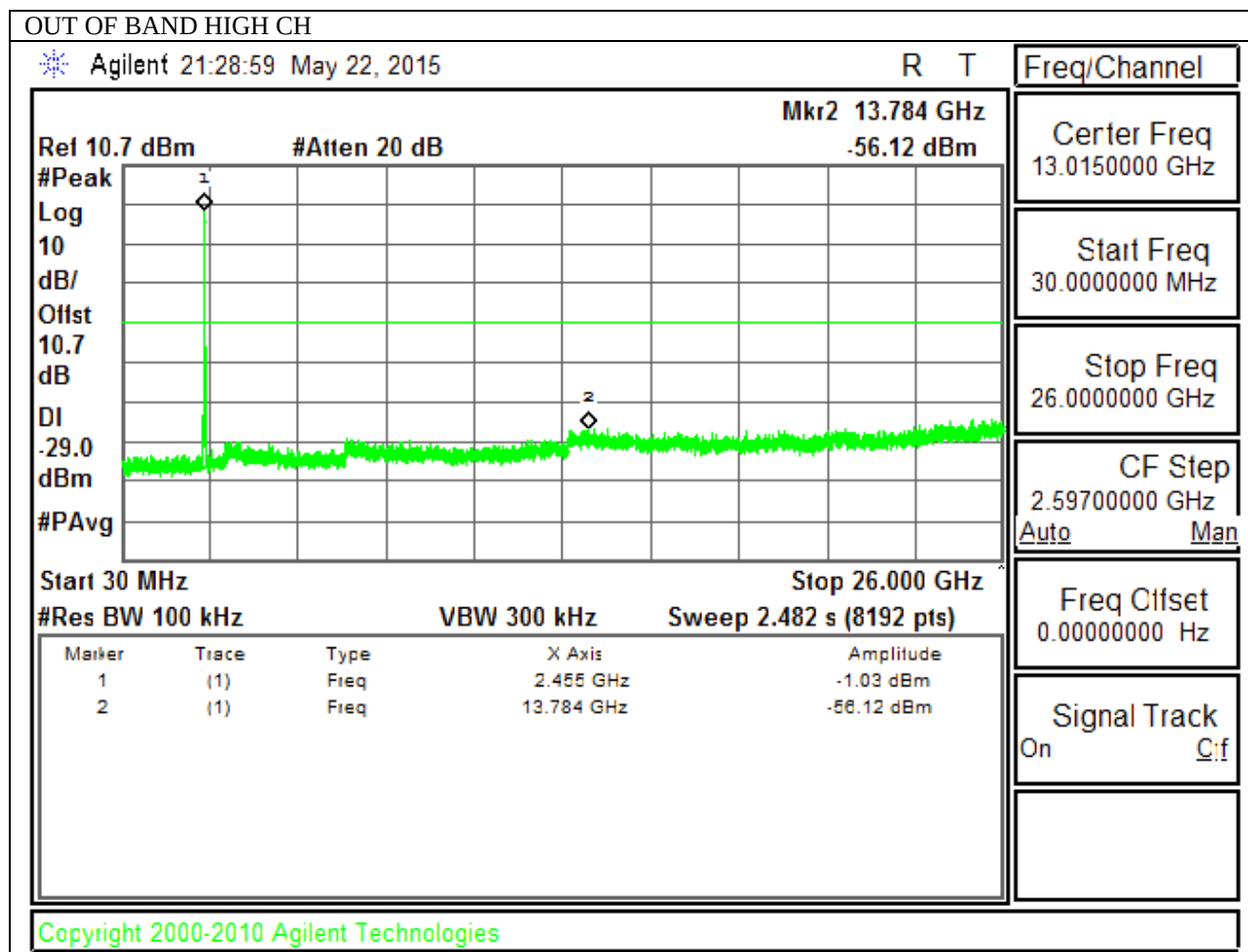
HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS

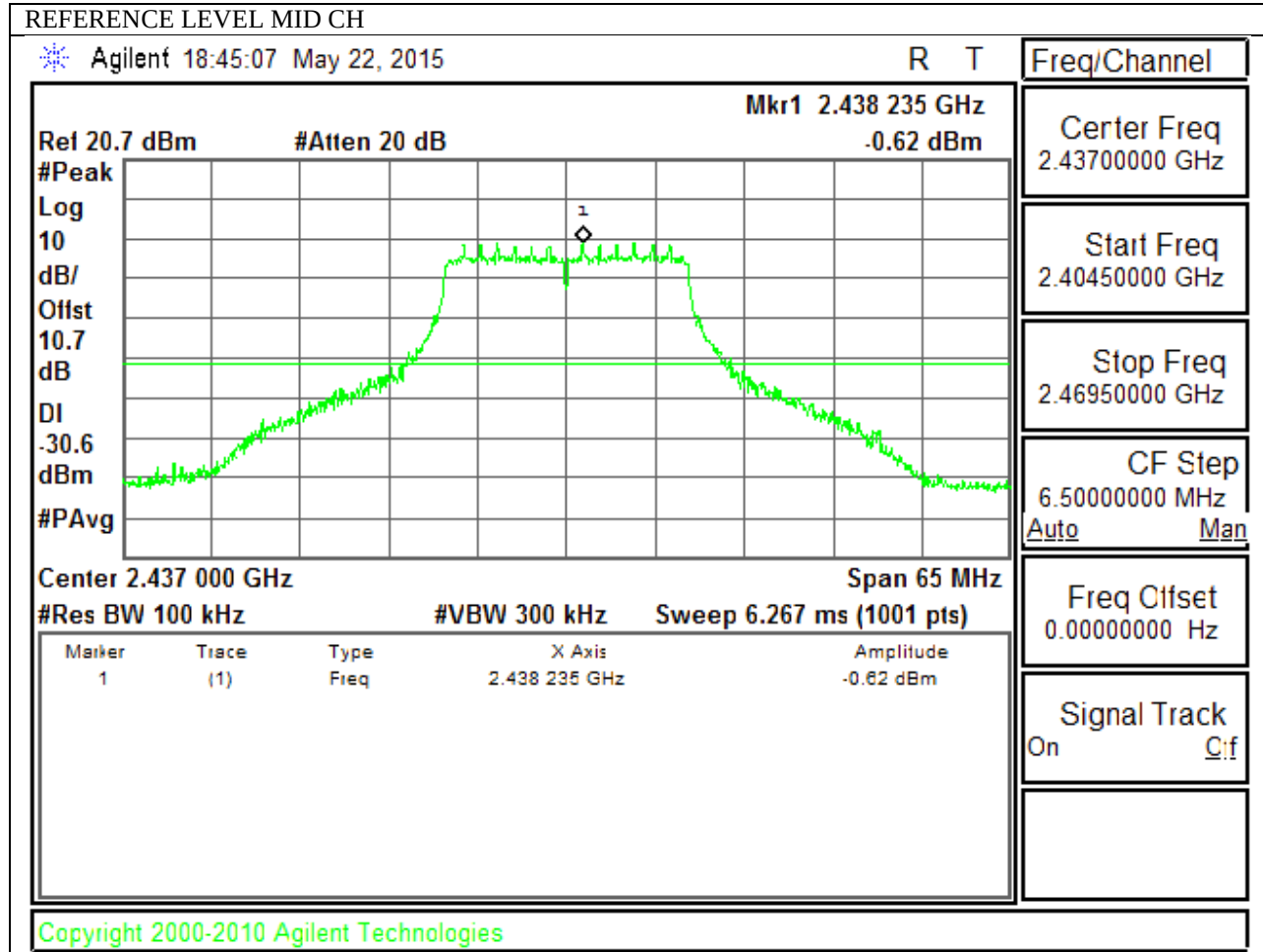




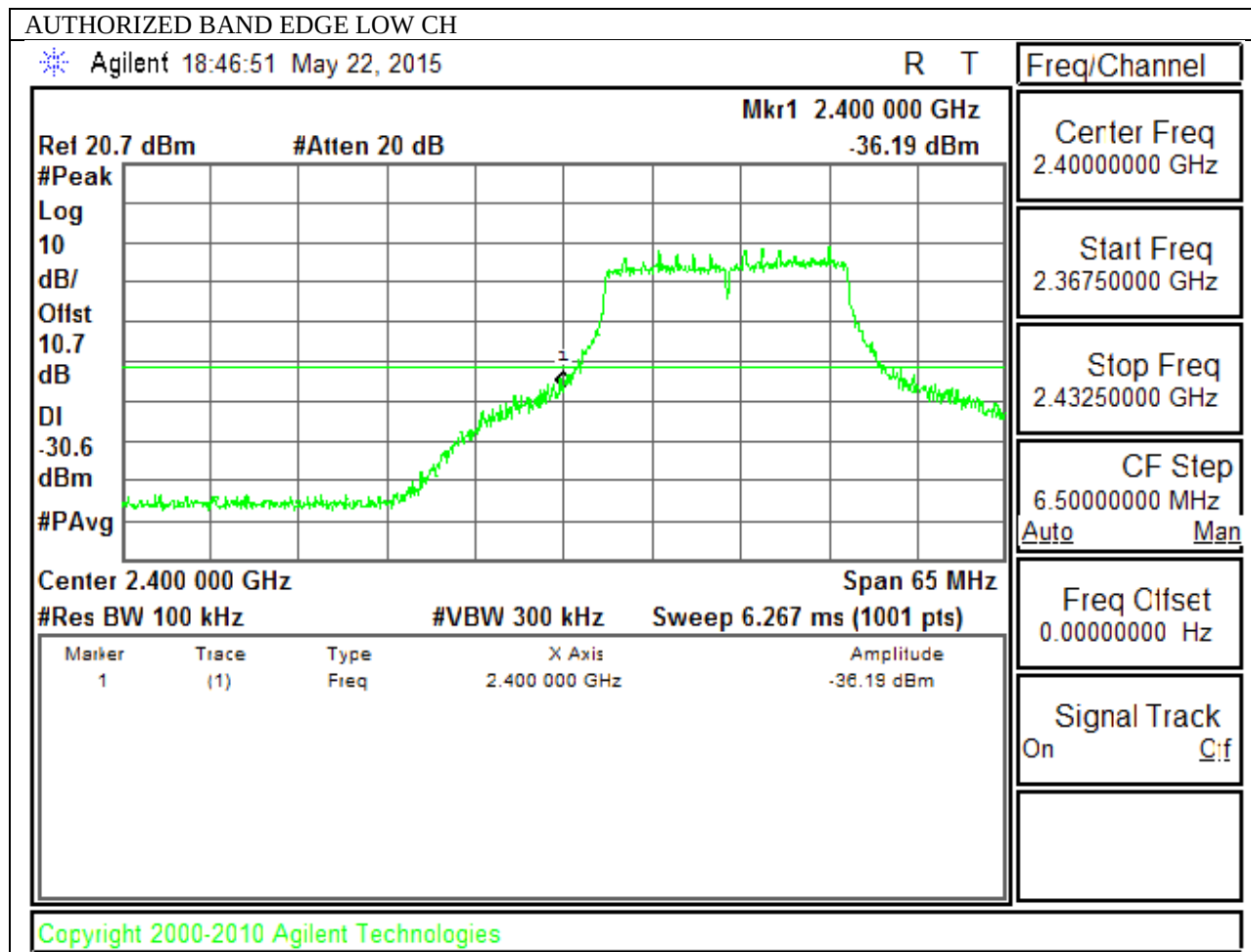


9.5.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

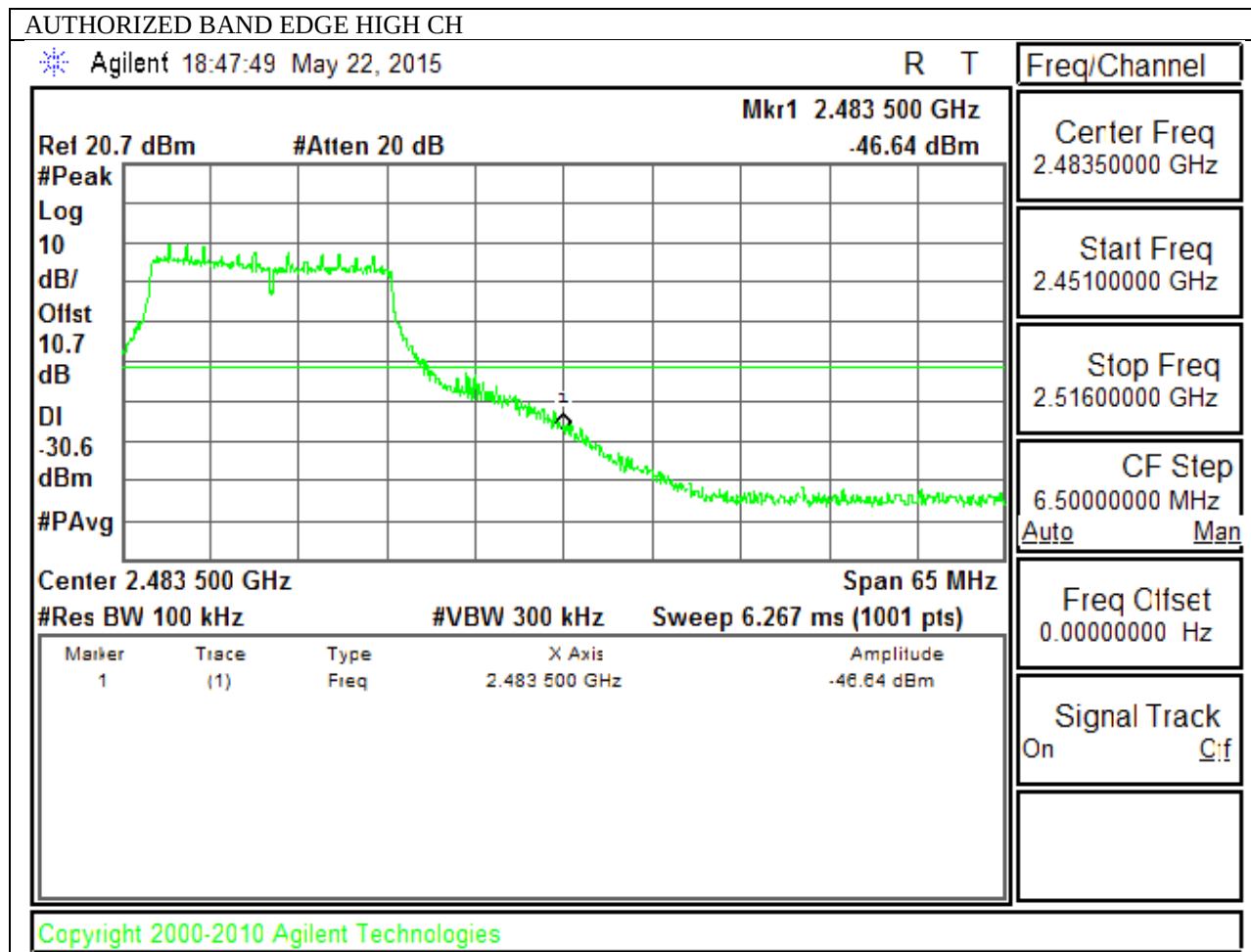
IN-BAND REFERENCE LEVEL



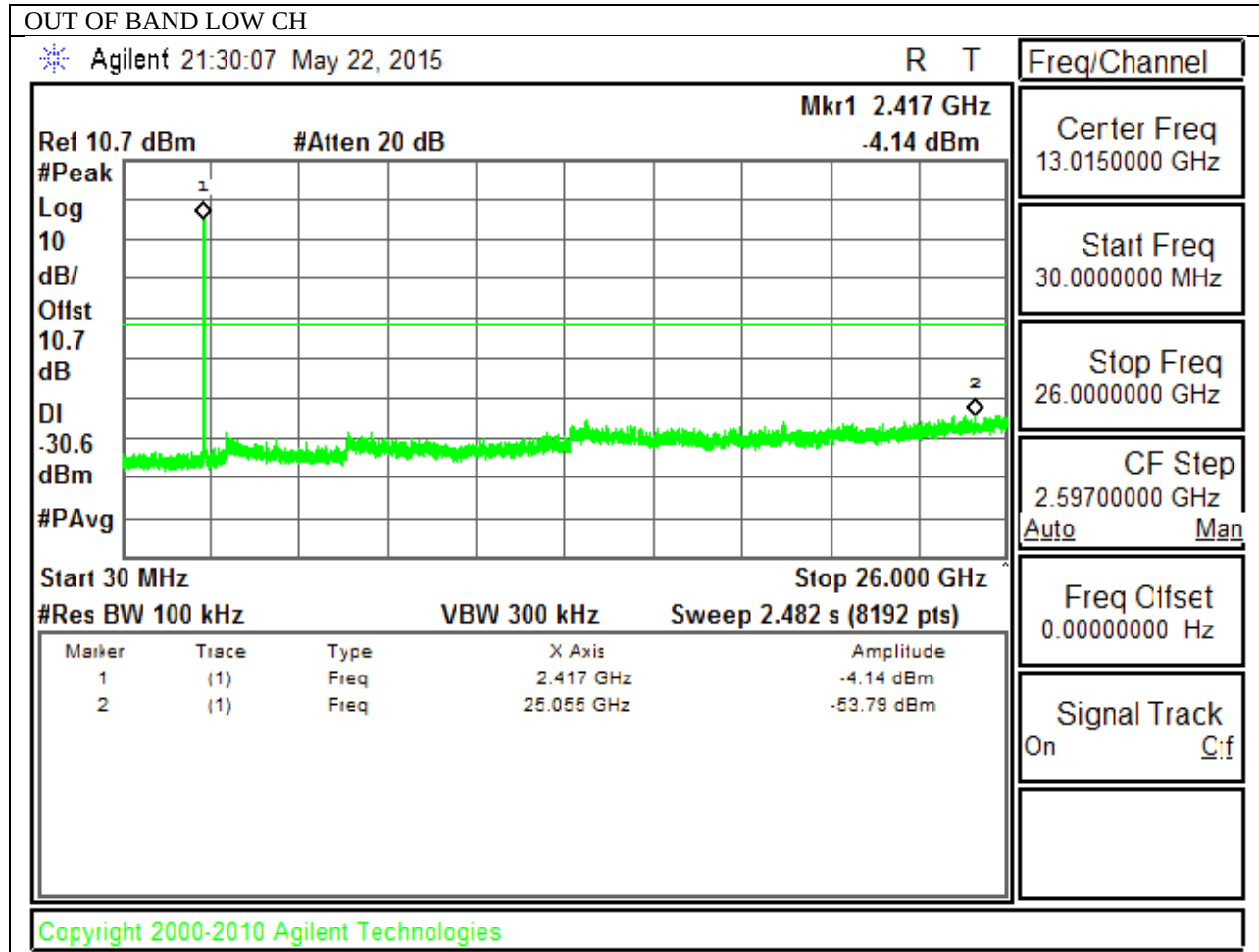
LOW CHANNEL BANDEDGE

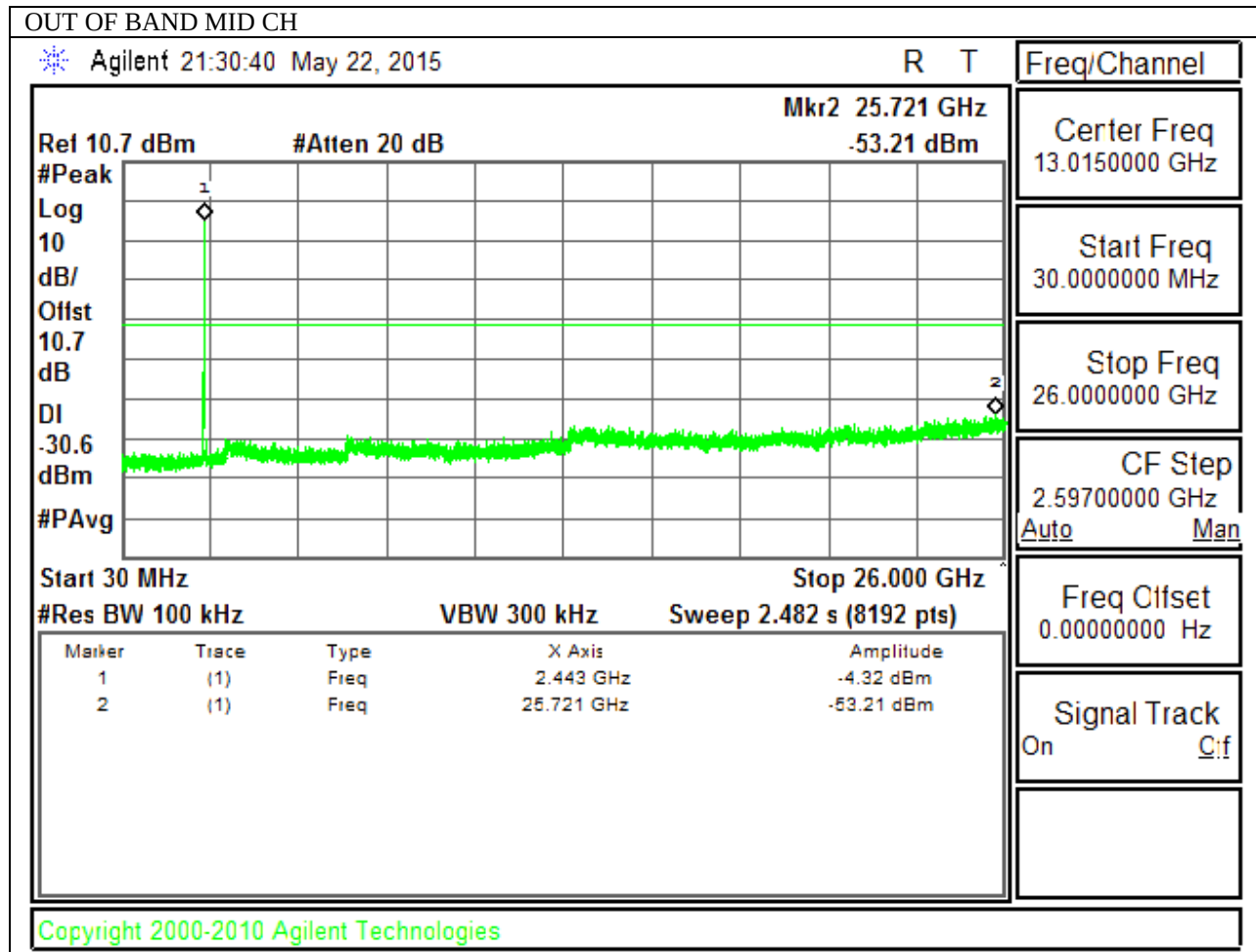


HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS





OUT OF BAND HIGH CH

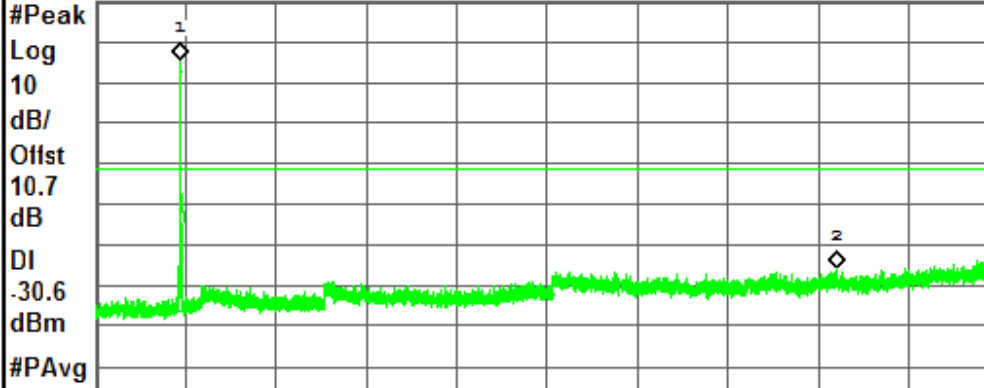
Agilent 21:31:21 May 22, 2015

R T

Freq/Channel

Ref 10.7 dBm #Atten 20 dB Mkr1 2.459 GHz -3.83 dBm

Center Freq
13.0150000 GHz



Start Freq
30.0000000 MHz

Stop Freq
26.0000000 GHz

CF Step
2.59700000 GHz
Auto Man

Start 30 MHz Stop 26.000 GHz
#Res BW 100 kHz VBW 300 kHz Sweep 2.482 s (8192 pts)

Freq Offset
0.0000000 Hz

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.459 GHz	-3.83 dBm
2	(1)	Freq	21.346 GHz	-55.40 dBm

Signal Track
On Off

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10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-GEN Clause 8.9 (Transmitter)

IC RSS-GEN Clause 7 (Receiver)

Frequency Range (MHz)	Field Strength Limit ($\mu\text{V/m}$) at 3 m	Field Strength Limit (dB $\mu\text{V/m}$) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average measurements. Duty cycle factor= $10\log(1/x)$ For this sample B mode = 0dB (duty cycle >98%); G mode = 0.214dB; N mode = 0.236dB.

The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

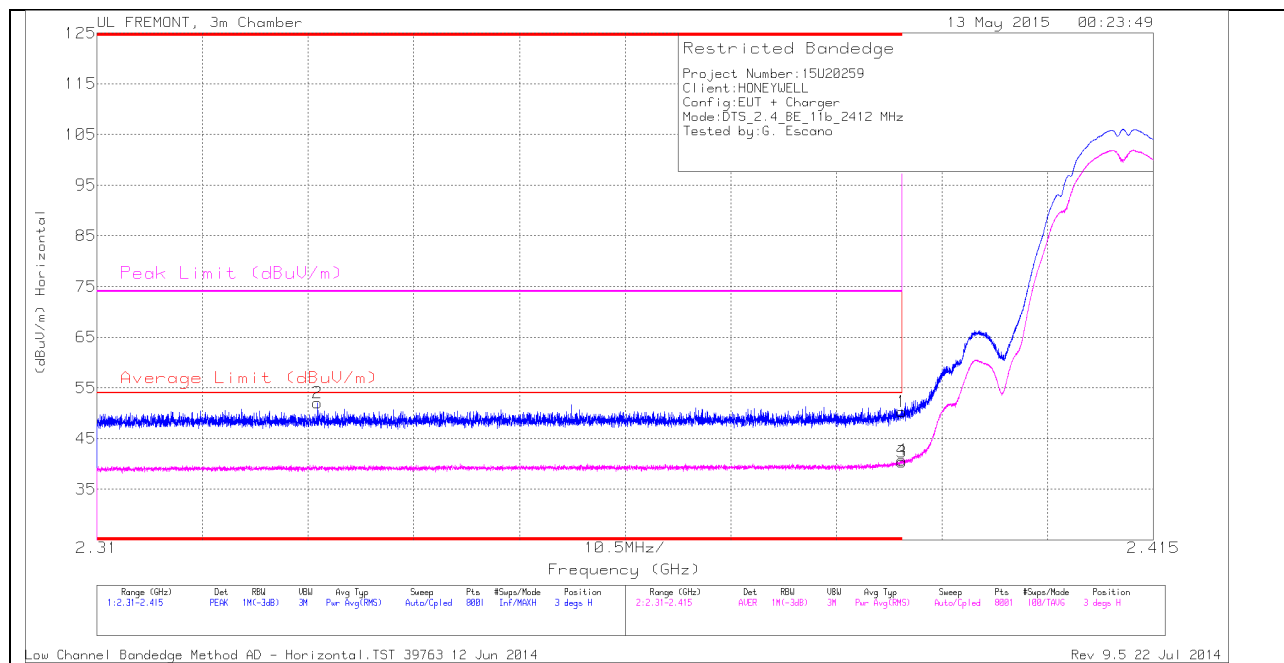
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

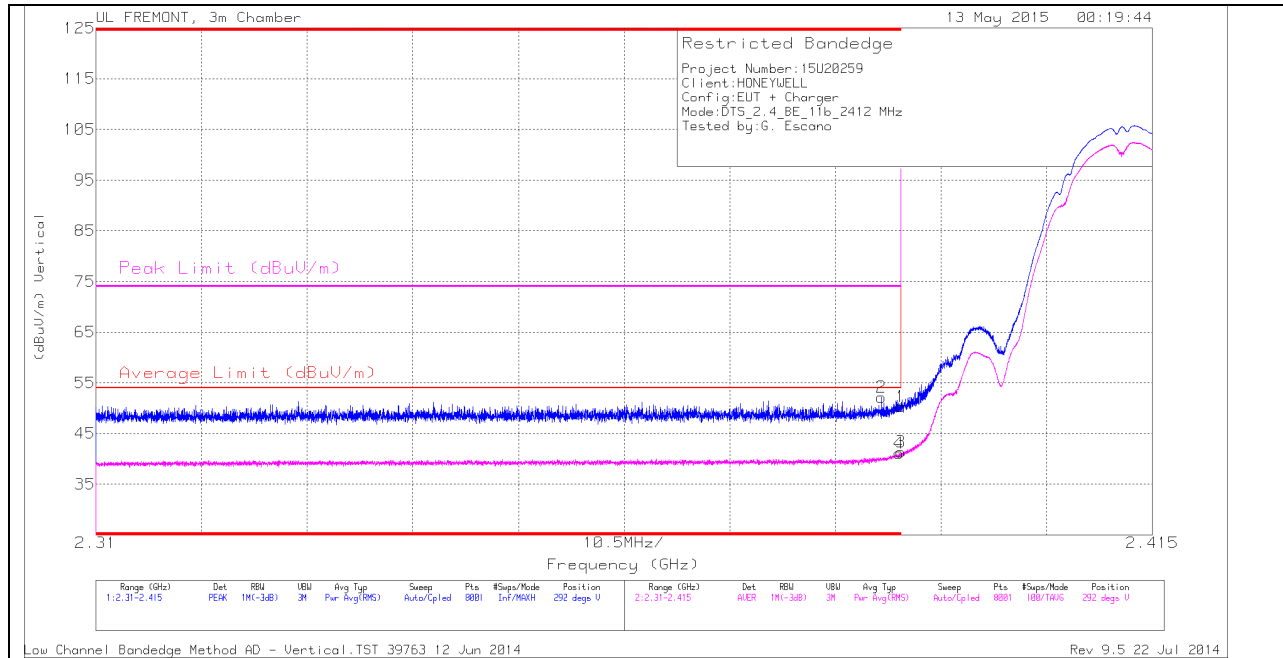
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cb/Filter/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.332	43.43	PK	31.7	-23.1	0	52.03	-	-	74	-21.97	3	226	H
1	* 2.39	41.4	PK	32	-23.1	0	50.3	-	-	74	-23.7	3	226	H
3	* 2.39	31.51	RMS	32	-23.1	0	40.41	54	-13.59	-	-	3	226	H
4	* 2.39	31.82	RMS	32	-23.1	0	40.72	54	-13.28	-	-	3	226	H

VERTICAL PEAK AND AVERAGE PLOT

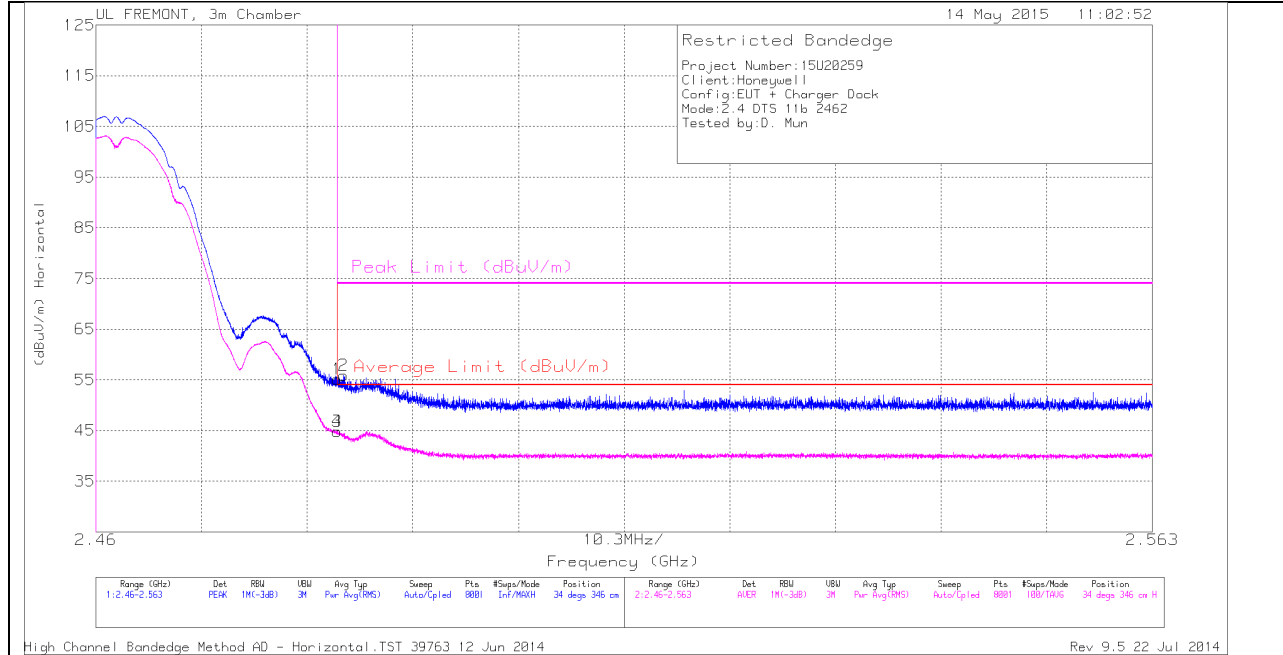


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cb/Filter/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.388	43.28	PK	32	-23.1	0	52.18	-	-	74	-21.82	292	348	V
1	* 2.39	41.43	PK	32	-23.1	0	50.33	-	-	74	-23.67	292	348	V
3	* 2.39	32.48	RMS	32	-23.1	0	41.38	54	-12.62	-	-	292	348	V
4	* 2.39	32.22	RMS	32	-23.1	0	41.12	54	-12.88	-	-	292	348	V

AUTHORIZED BANDEDGE (HIGH CHANNEL)

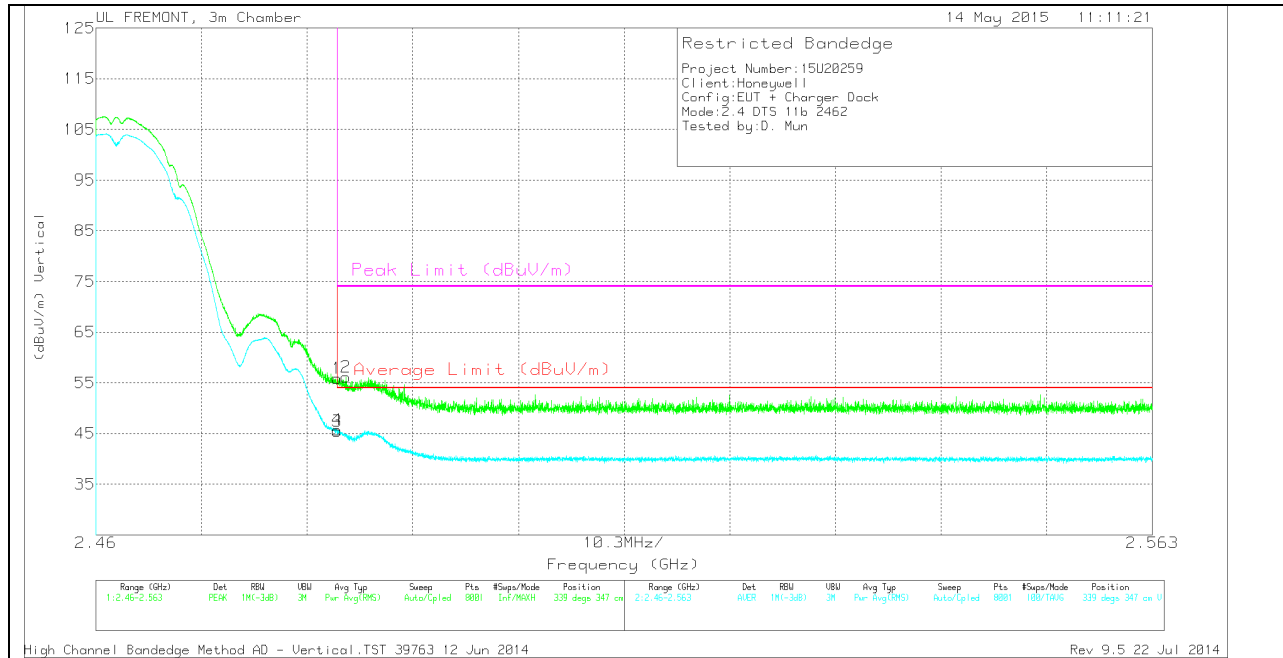
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	45.69	PK	32.3	-22.8	55.19	-	-	74	-18.81	34	346	H
2	2.484	46.41	PK	32.3	-22.8	55.91	-	-	74	-18.09	34	346	H
3	2.484	35.34	RMS	32.3	-22.8	44.84	54	-9.16	-	-	34	346	H
4	2.484	35.38	RMS	32.3	-22.8	44.88	54	-9.12	-	-	34	346	H

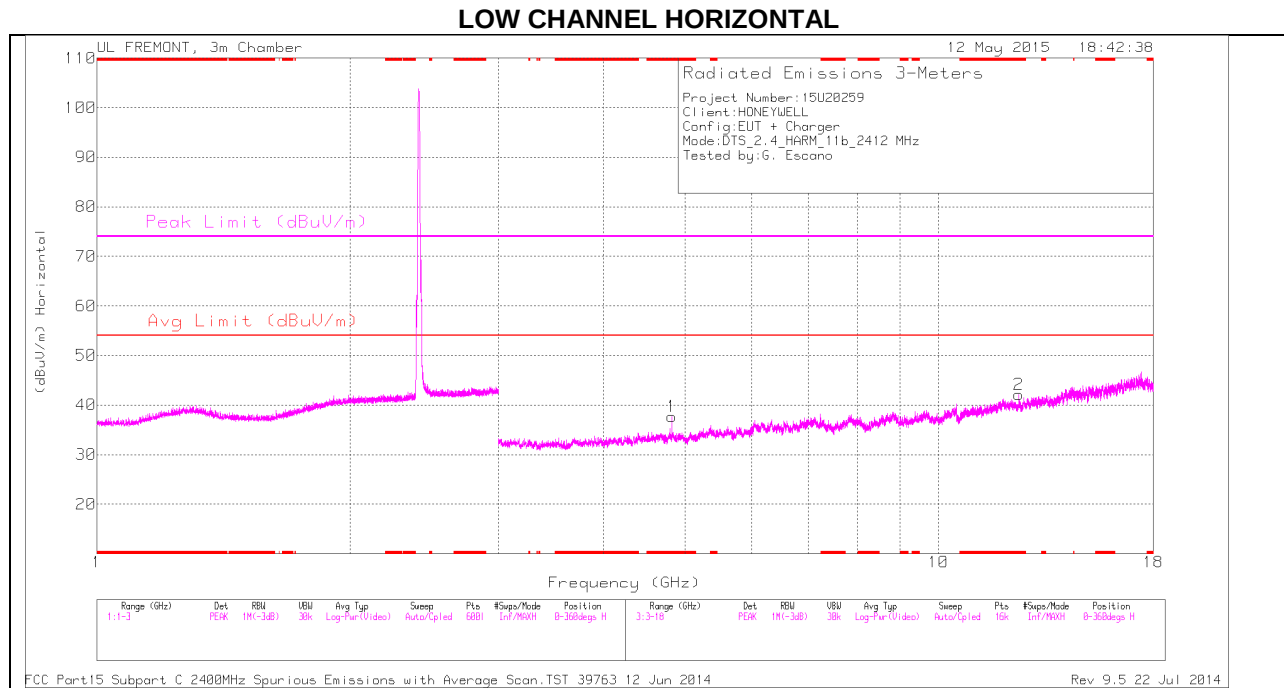
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

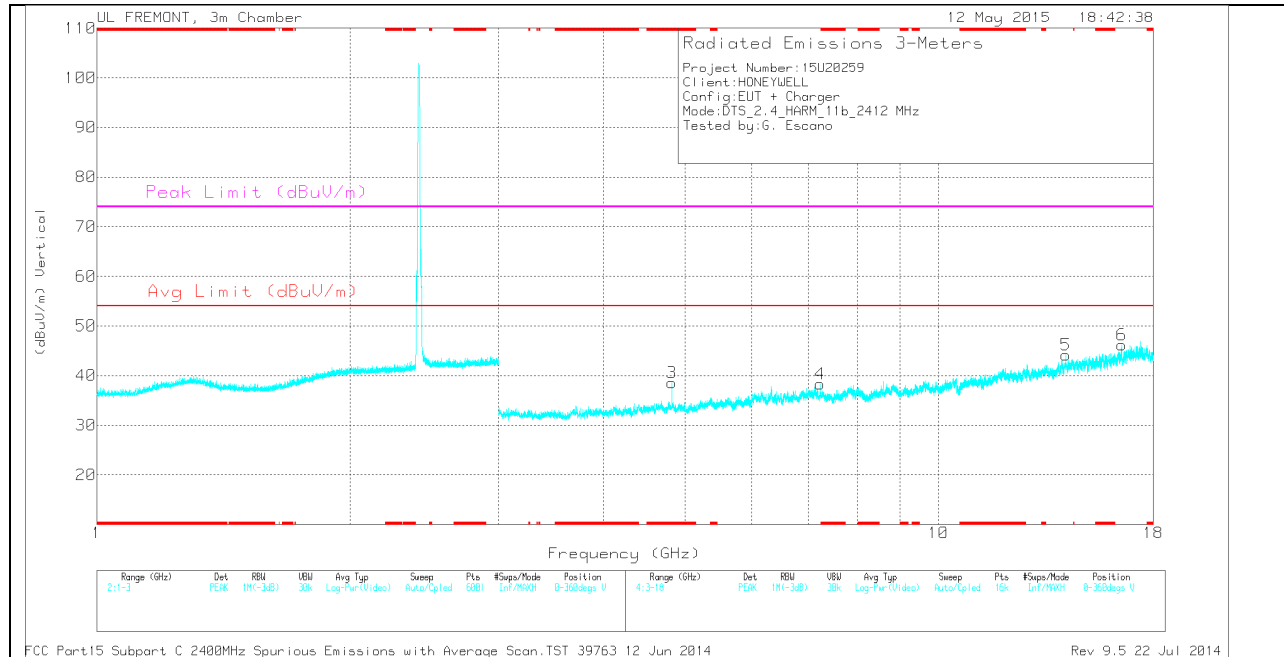
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	46.35	PK	32.3	-22.8	55.85	-	-	74	-18.15	339	347	V
2	2.484	46.65	PK	32.3	-22.8	56.15	-	-	74	-17.85	339	347	V
3	2.484	35.98	RMS	32.3	-22.8	45.48	54	-8.52	-	-	339	347	V
4	2.484	36.25	RMS	32.3	-22.8	45.75	54	-8.25	-	-	339	347	V

HARMONICS AND SPURIOUS EMISSIONS



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.824	33.86	PK	34	-30.2	0	37.66	-	-	74	-36.34	0-360	200	H
2	* 12.447	29.78	PK	39	-26.7	0	42.08	-	-	74	-31.92	0-360	100	H
3	* 4.824	34.73	PK	34	-30.2	0	38.53	-	-	74	-35.47	0-360	200	V
4	7.236	32.46	PK	35.6	-29.7	0	38.36	-	-	-	-	0-360	200	V
5	14.162	31.74	PK	39.1	-26.7	0	44.14	-	-	-	-	0-360	200	V
6	16.499	29.2	PK	40.9	-23.9	0	46.2	-	-	-	-	0-360	200	V

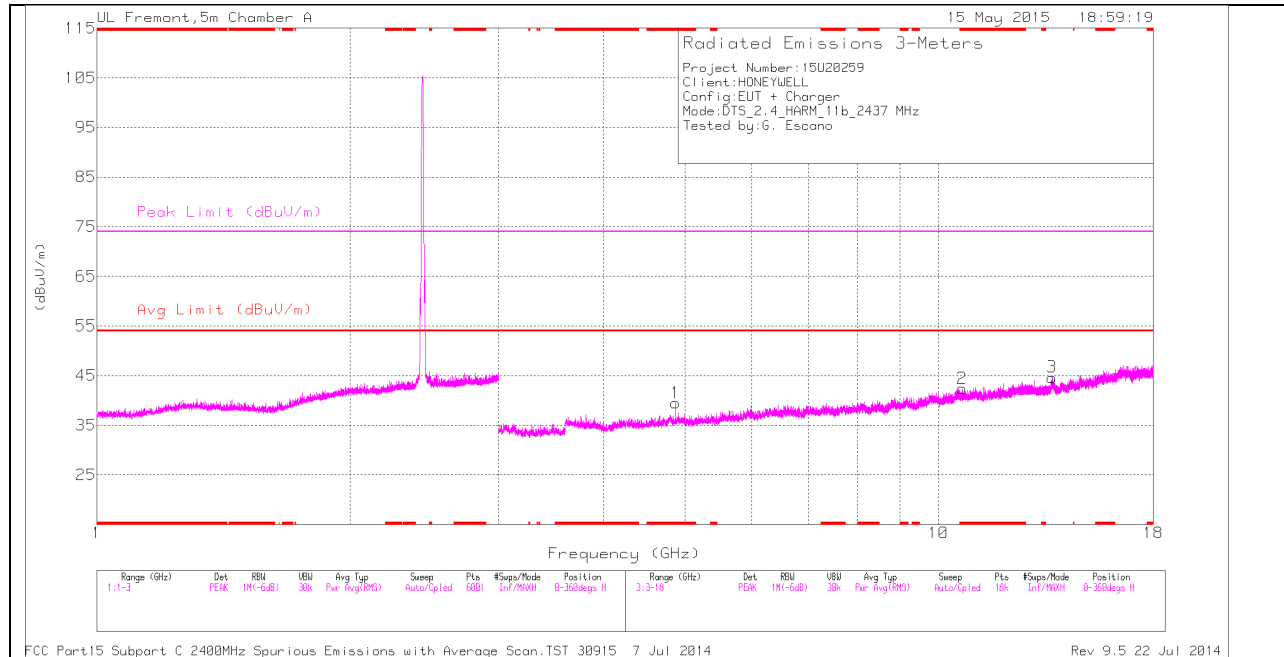
PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.824	42.81	PK2	34	-30.3	0	46.51	-	-	74	-27.49	311	250	H
* 4.824	34.47	MAV1	34	-30.3	0	38.17	54	-15.83	-	-	311	250	H
* 12.447	37.64	PK2	39	-26.7	0	49.94	-	-	74	-24.06	263	397	H
* 12.448	26.13	MAV1	39	-26.6	0	38.53	54	-15.47	-	-	263	397	H
* 4.824	42.56	PK2	34	-30.2	0	46.36	-	-	74	-27.64	203	210	V
* 4.824	33.24	MAV1	34	-30.3	0	36.94	54	-17.06	-	-	203	210	V

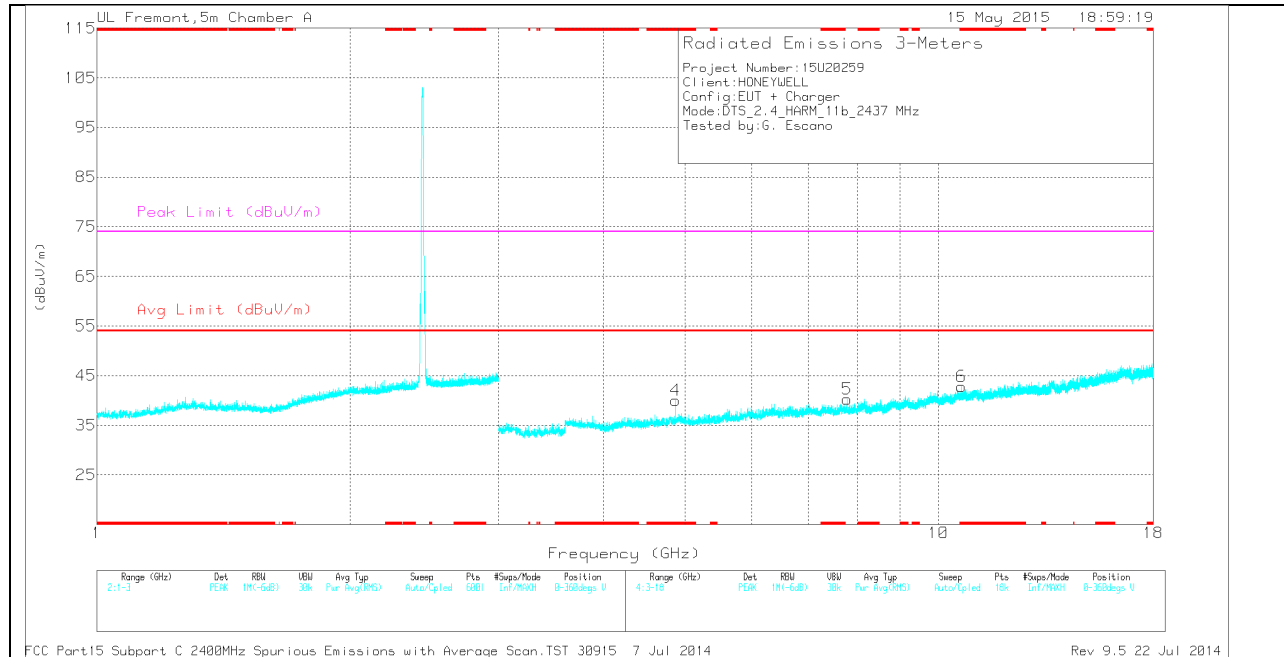
FCC Part15 Subpart C T186 2400MHz Spurious Emissions.TST 12746Rev 9.5 12 Jun 2013

MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.874	35.69	PK	33.9	-30.1	0	39.49	-	-	74	-34.51	0-360	201	H
2	* 10.669	27.81	PK	37.7	-23.1	0	42.41	-	-	74	-31.59	0-360	201	H
4	* 4.874	36.25	PK	33.9	-30.1	0	40.05	-	-	74	-33.95	0-360	201	V
6	* 10.653	28.17	PK	37.7	-23.1	0	42.77	-	-	74	-31.23	0-360	100	V
5	7.79	30.44	PK	35.7	-25.9	0	40.24	-	-	-	-	0-360	100	V
3	13.641	28.45	PK	38.8	-22.6	0	44.65	-	-	-	-	0-360	201	H

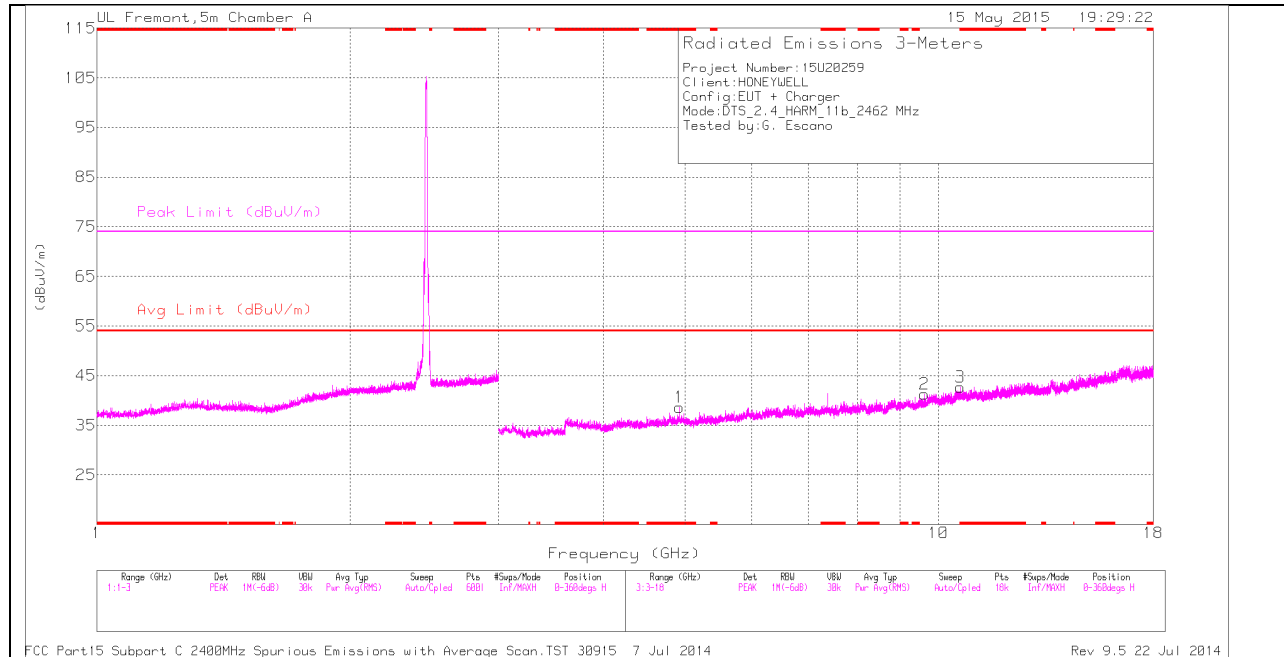
PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.874	42.45	PK2	33.9	-30.1	0	46.25	-	-	74	-27.75	326	197	H
* 4.874	33.39	MAV1	33.9	-30.1	0	37.19	54	-16.81	-	-	326	197	H
* 10.669	35.25	PK2	37.7	-23.1	0	49.85	-	-	74	-24.15	124	170	H
* 10.668	23.16	MAV1	37.7	-23.1	0	37.76	54	-16.24	-	-	124	170	H
* 4.874	44.13	PK2	33.9	-30.1	0	47.93	-	-	74	-26.07	205	277	V
* 4.874	36.88	MAV1	33.9	-30.1	0	40.68	54	-13.32	-	-	205	277	V
* 10.652	35.33	PK2	37.7	-23.1	0	49.93	-	-	74	-24.07	0	142	V
* 10.652	23.29	MAV1	37.7	-23.1	0	37.89	54	-16.11	-	-	0	142	V

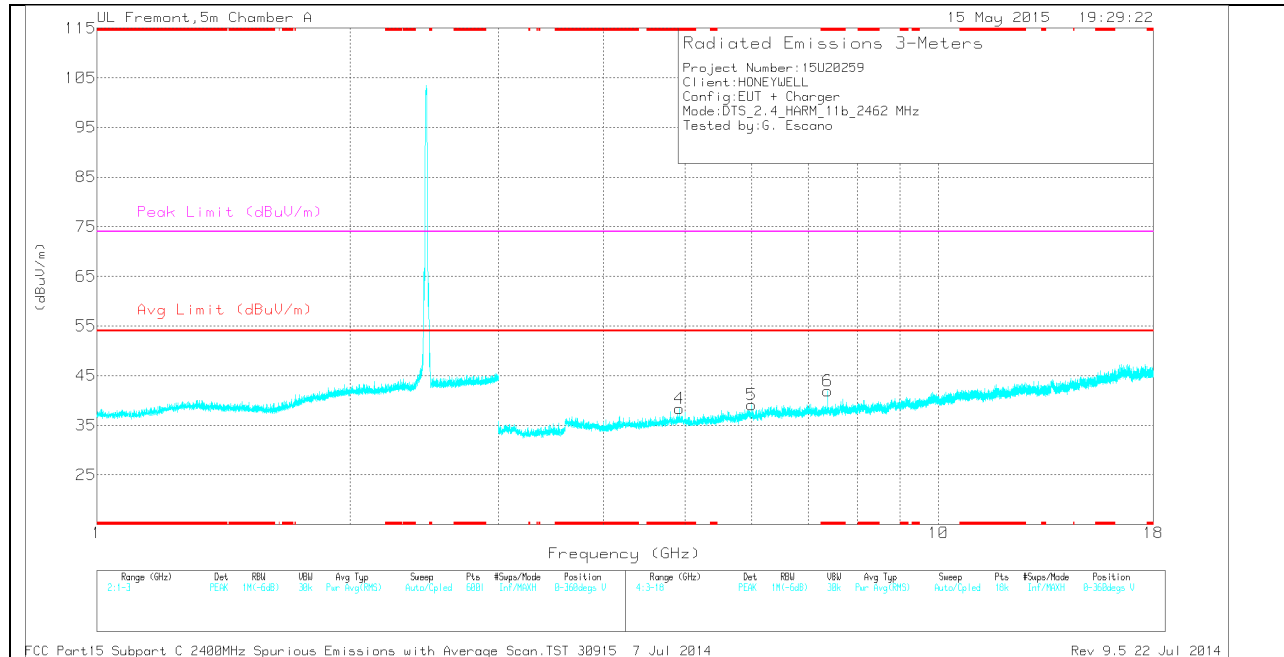
FCC Part15 Subpart C T186 2400MHz Spurious Emissions.TST 12746Rev 9.5 12 Jun 2013

HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.924	34.28	PK	33.9	-29.6	0	38.58	-	-	74	-35.42	0-360	201	H
3	* 10.616	27.97	PK	37.7	-23	0	42.67	-	-	74	-31.33	0-360	201	H
4	* 4.924	34.05	PK	33.9	-29.6	0	38.35	-	-	74	-35.65	0-360	201	V
6	* 7.385	32.36	PK	35.5	-25.9	0	41.96	-	-	74	-32.04	0-360	201	V
5	5.994	32.68	PK	35.4	-28.9	0	39.18	-	-	-	-	0-360	100	V
2	9.624	29.23	PK	36.7	-24.6	0	41.33	-	-	-	-	0-360	100	H

PK - Peak detector

RADIATED EMISSIONS

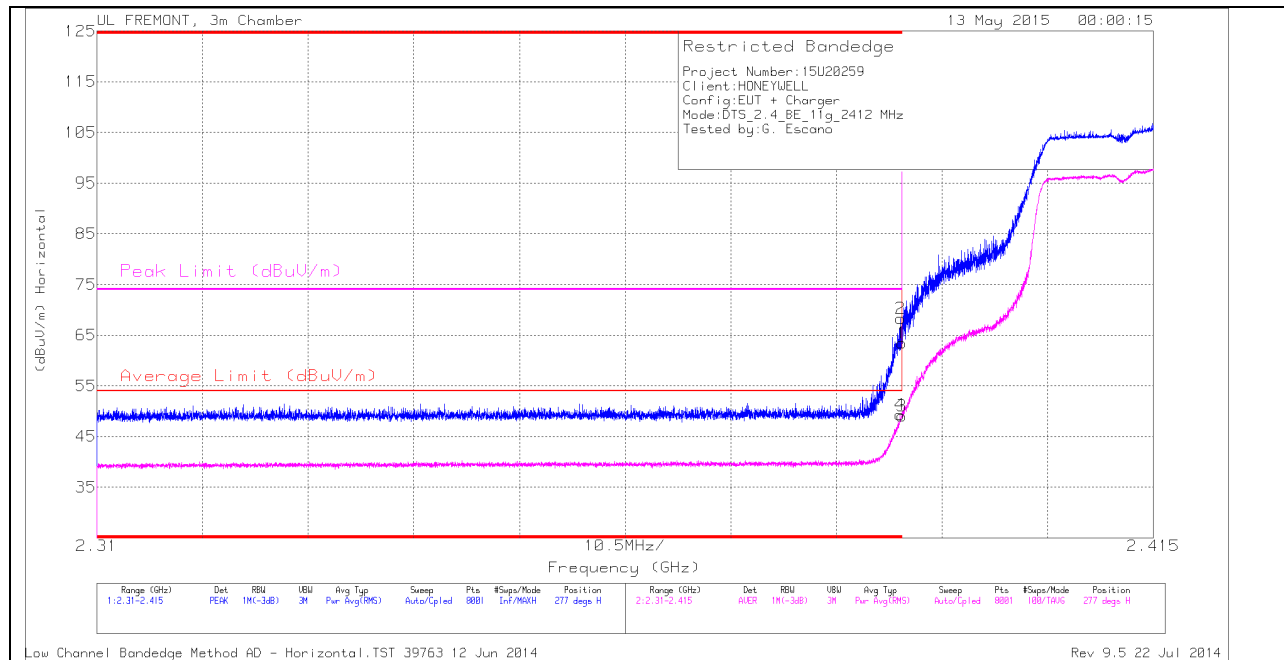
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.924	41.44	PK2	33.9	-29.6	0	45.74	-	-	74	-28.26	218	185	H
* 4.924	31.22	MAV1	33.9	-29.6	0	35.52	54	-18.48	-	-	218	185	H
* 10.617	34.46	PK2	37.7	-23	0	49.16	-	-	74	-24.84	15	346	H
* 10.615	22.87	MAV1	37.7	-23	0	37.57	54	-16.43	-	-	15	346	H
* 4.923	42.09	PK2	33.9	-29.6	0	46.39	-	-	74	-27.61	173	245	V
* 4.924	33.09	MAV1	33.9	-29.6	0	37.39	54	-16.61	-	-	173	245	V
* 7.386	40.19	PK2	35.5	-25.9	0	49.79	-	-	74	-24.21	132	259	V
* 7.385	31.28	MAV1	35.5	-25.9	0	40.88	54	-13.12	-	-	132	259	V

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10.2.2. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

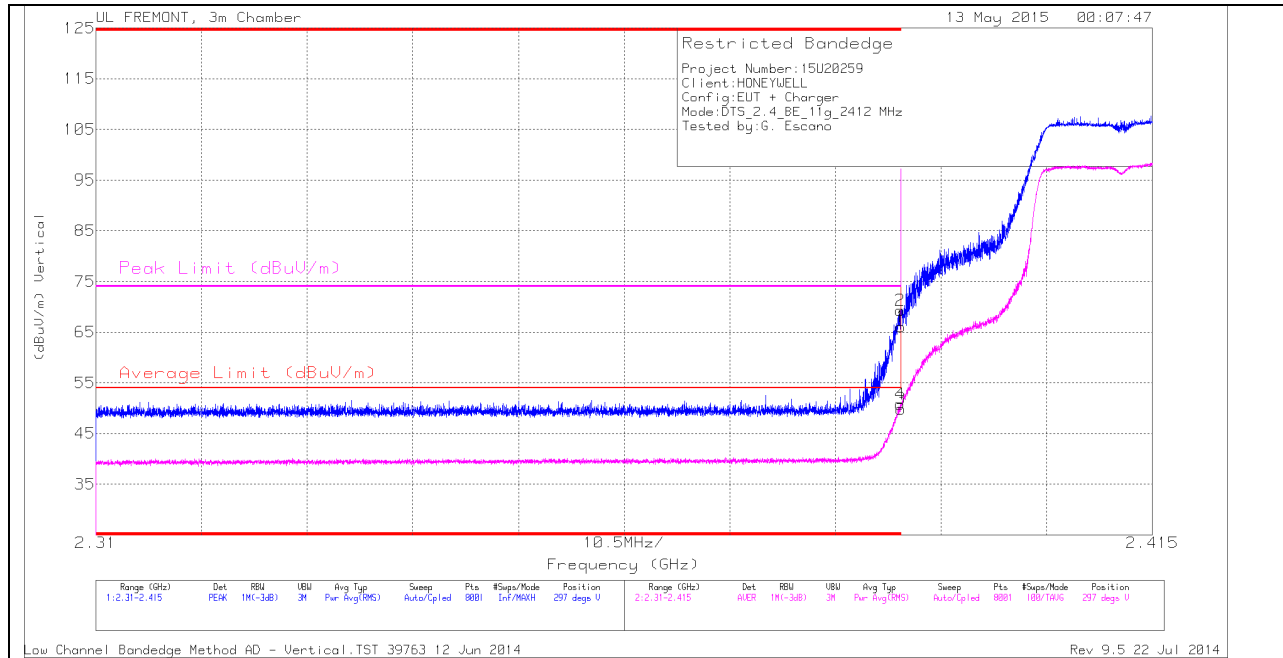
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filt r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	54.58	PK	32	-23.1	0	63.48	-	-	74	-10.52	277	334	H
2	* 2.39	59.36	PK	32	-23.1	0	68.26	-	-	74	-5.74	277	334	H
3	* 2.39	39.96	RMS	32	-23.1	.23	49.09	54	-4.91	-	-	277	334	H
4	* 2.39	40.21	RMS	32	-23.1	.23	49.34	54	-4.66	-	-	277	334	H

VERTICAL PEAK AND AVERAGE PLOT

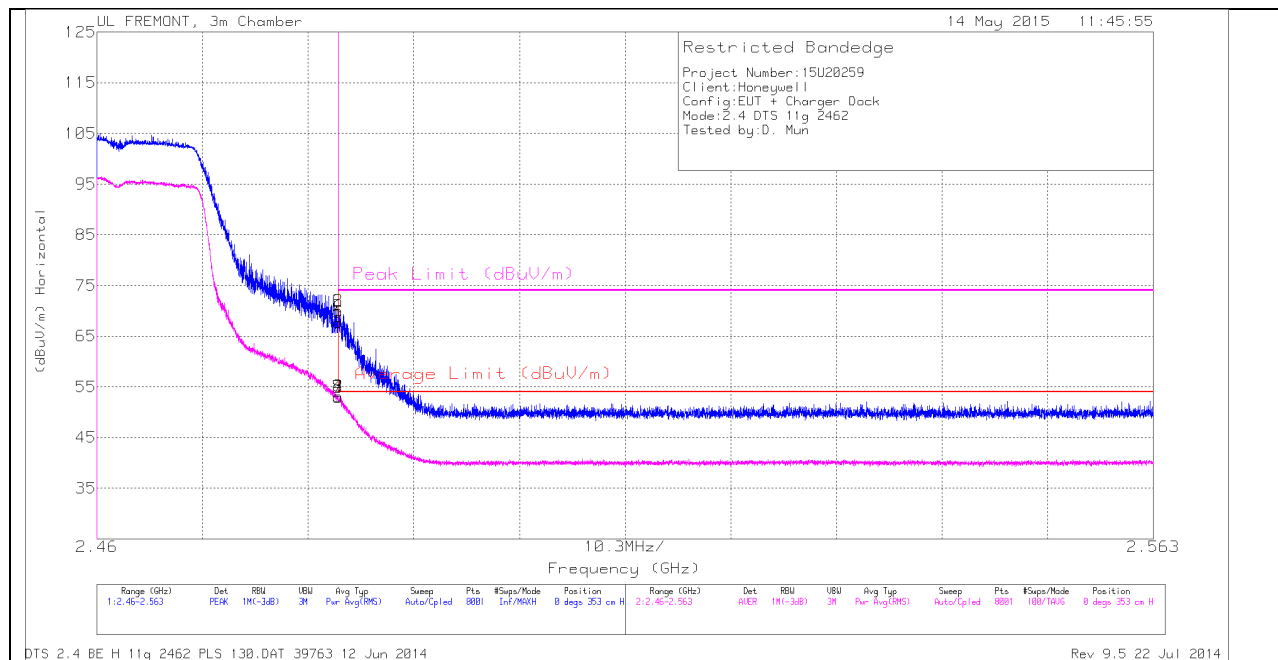


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fitter/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	57.13	PK	32	-23.1	0	66.03	-	-	74	-7.97	297	340	V
2	* 2.39	60.39	PK	32	-23.1	0	69.29	-	-	74	-4.71	297	340	V
3	* 2.39	40.73	RMS	32	-23.1	.23	49.86	54	-4.14	-	-	297	340	V
4	* 2.39	41.68	RMS	32	-23.1	.23	50.81	54	-3.19	-	-	297	340	V

AUTHORIZED BANDEDGE (HIGH CHANNEL)

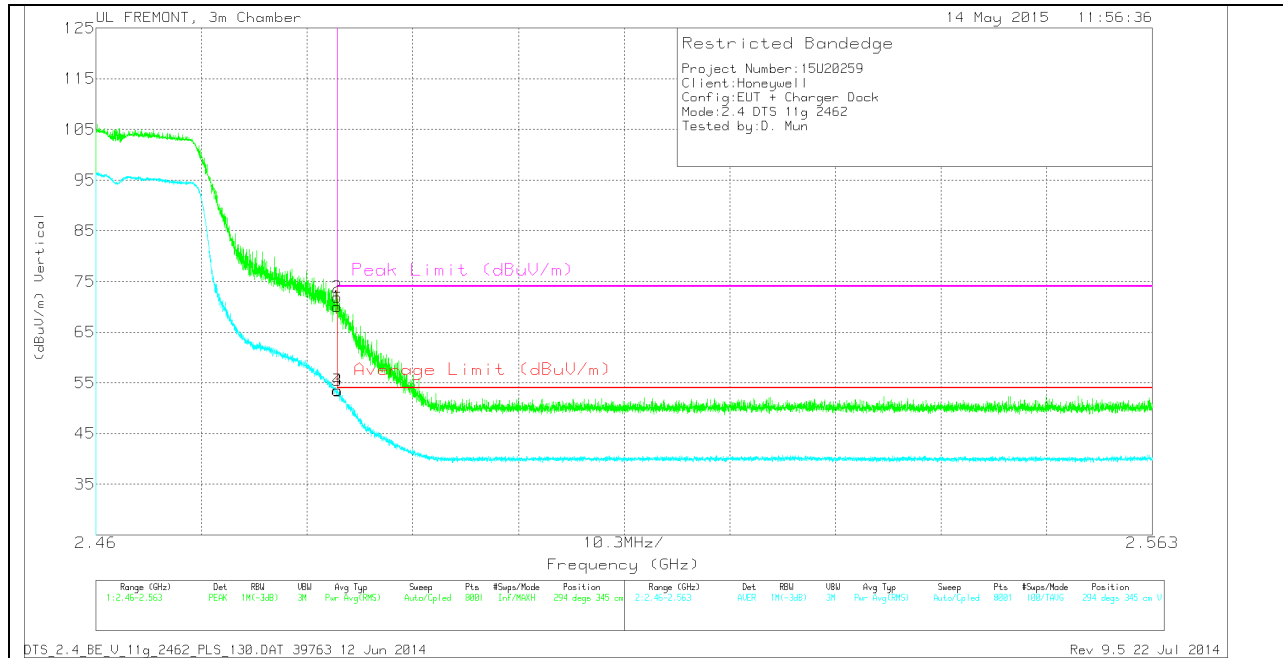
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	58.19	PK	32.3	-22.8	67.69	-	-	74	-6.31	0	353	H
2	2.484	60.53	PK	32.3	-22.8	70.03	-	-	74	-3.97	0	353	H
5	2.484	58.19	PK	32.3	-22.8	67.69	-	-	74	-6.31	0	353	H
6	2.484	60.53	PK	32.3	-22.8	70.03	-	-	74	-3.97	0	353	H
3	2.484	43.46	RMS	32.3	-22.8	52.96	54	-1.04	-	-	0	353	H
4	2.484	43.6	RMS	32.3	-22.8	53.1	54	-0.9	-	-	0	353	H
7	2.484	43.46	RMS	32.3	-22.8	52.96	54	-1.04	-	-	0	353	H
8	2.484	43.6	RMS	32.3	-22.8	53.1	54	-0.9	-	-	0	353	H

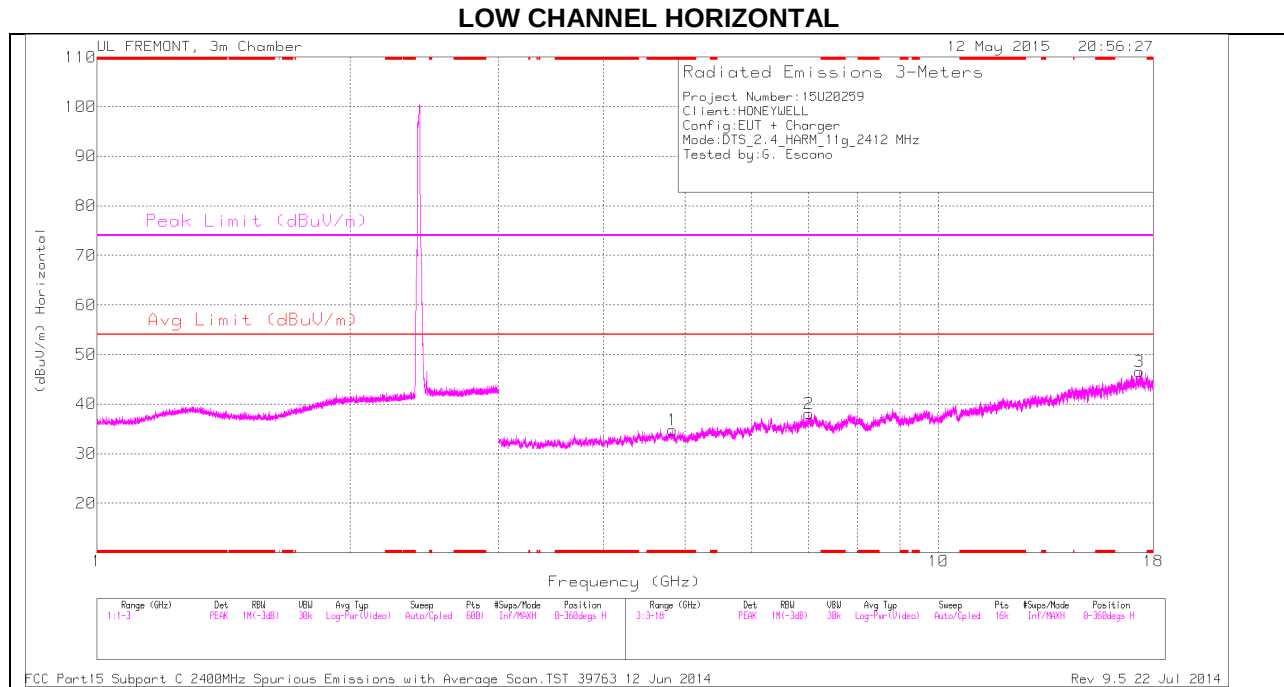
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

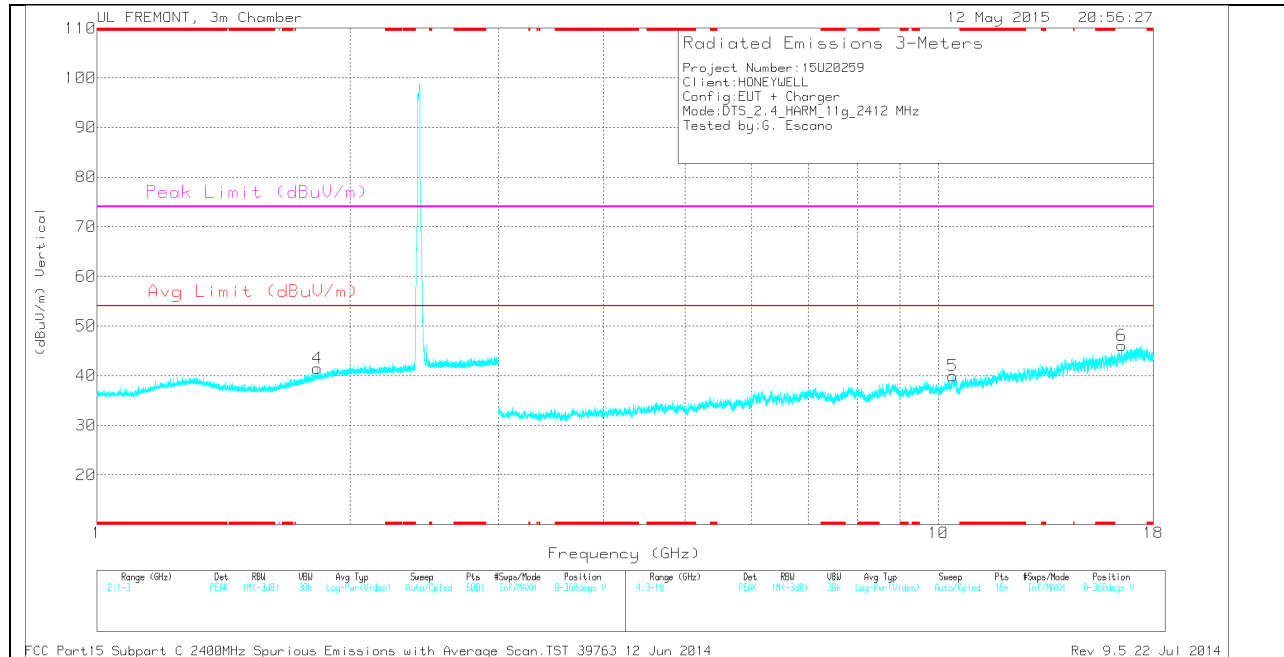
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	60.53	PK	32.3	-22.8	70.03	-	-	74	-3.97	294	345	V
2	2.484	62.34	PK	32.3	-22.8	71.84	-	-	74	-2.16	294	345	V
3	2.484	44.04	RMS	32.3	-22.8	53.54	54	-.46	-	-	294	345	V
4	2.484	43.96	RMS	32.3	-22.8	53.46	54	-.54	-	-	294	345	V

HARMONICS AND SPURIOUS EMISSIONS



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.829	30.81	PK	34	-30	0	34.81	-	-	74	-39.19	0-360	100	H
4	1.829	34.28	PK	30.5	-23.3	0	41.48	-	-	-	-	0-360	200	V
2	7.01	31.74	PK	35.6	-29.3	0	38.04	-	-	-	-	0-360	100	H
5	10.392	28.39	PK	37.2	-25.6	0	39.99	-	-	-	-	0-360	100	V
6	16.508	28.99	PK	41	-23.9	0	46.09	-	-	-	-	0-360	100	V
3	17.336	29.06	PK	41.4	-23.9	0	46.56	-	-	-	-	0-360	100	H

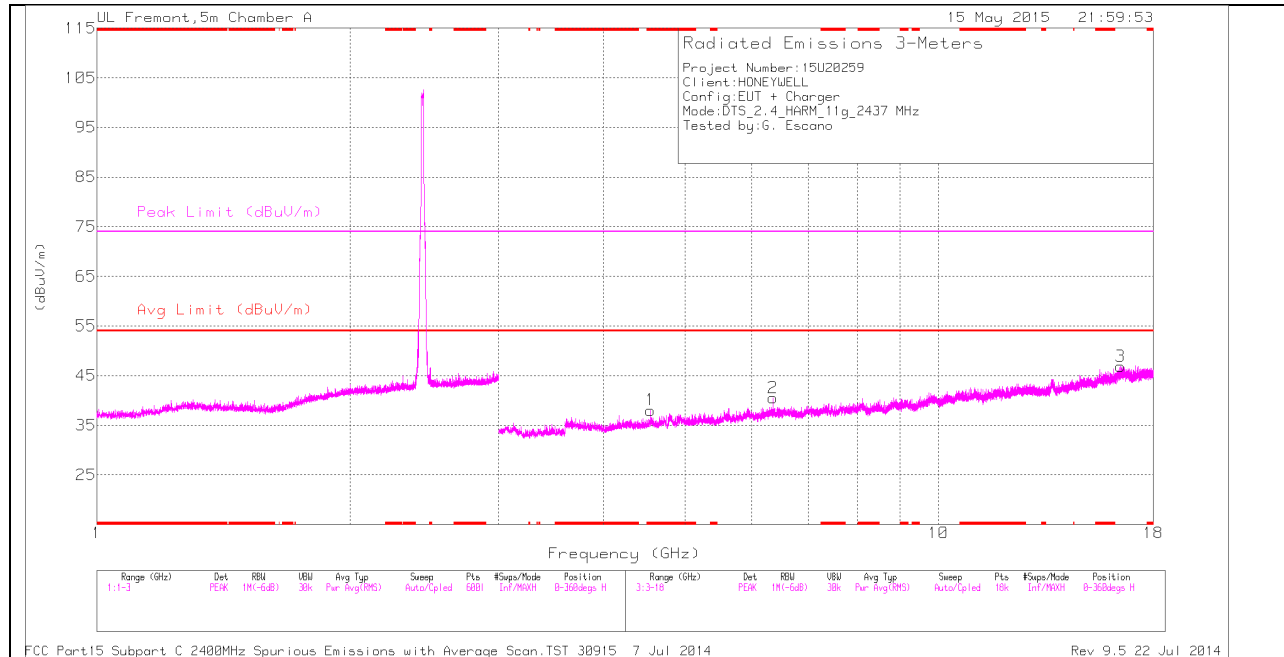
PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.828	41.02	PK2	34	-30.1	0	44.92	-	-	74	-29.08	96	261	H
* 4.83	28.64	MAV1	34	-30	.23	32.87	54	-21.13	-	-	96	261	H

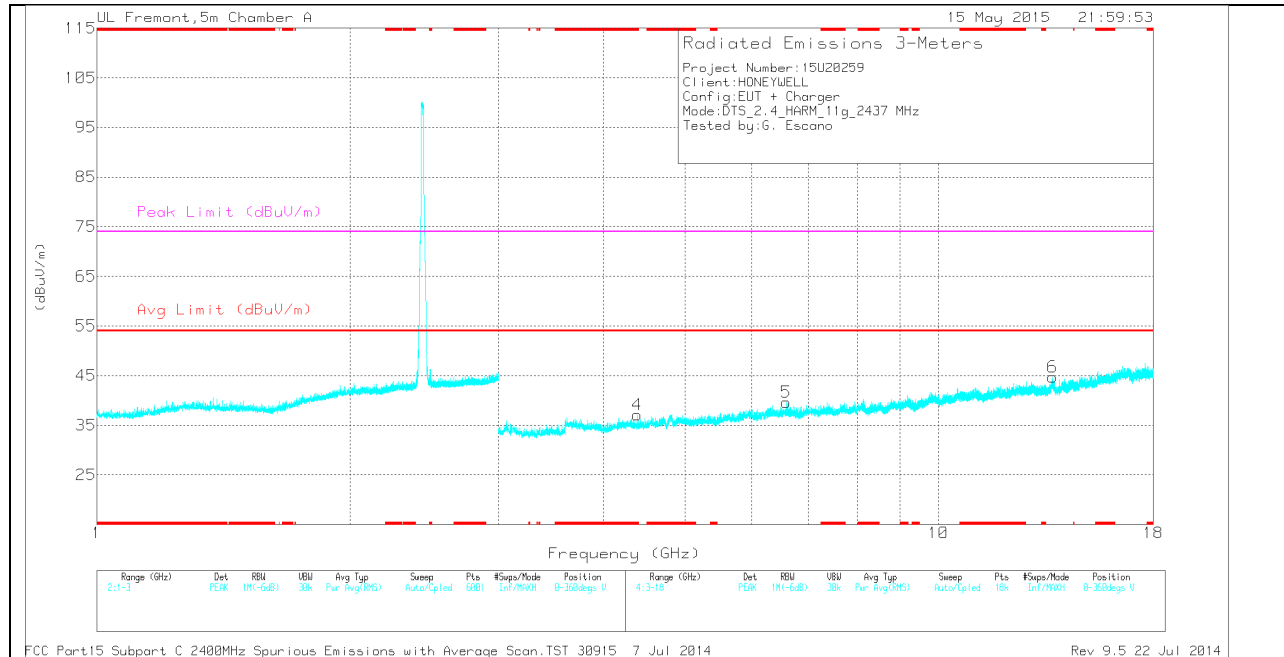
FCC Part15 Subpart C T186 2400MHz Spurious Emissions.TST 12746Rev 9.5 12 Jun 2013

MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.548	35.25	PK	33.9	-31.1	0	38.05	-	-	74	-35.95	0-360	201	H
4	* 4.385	35.57	PK	33.7	-32.2	0	37.07	-	-	74	-36.93	0-360	201	V
2	6.359	33.41	PK	35.5	-28.4	0	40.51	-	-	-	-	0-360	100	H
5	6.593	31.72	PK	35.6	-27.7	0	39.62	-	-	-	-	0-360	100	V
6	13.668	28.56	PK	38.8	-22.6	0	44.76	-	-	-	-	0-360	100	V
3	16.468	28.18	PK	41.6	-22.9	0	46.88	-	-	-	-	0-360	201	H

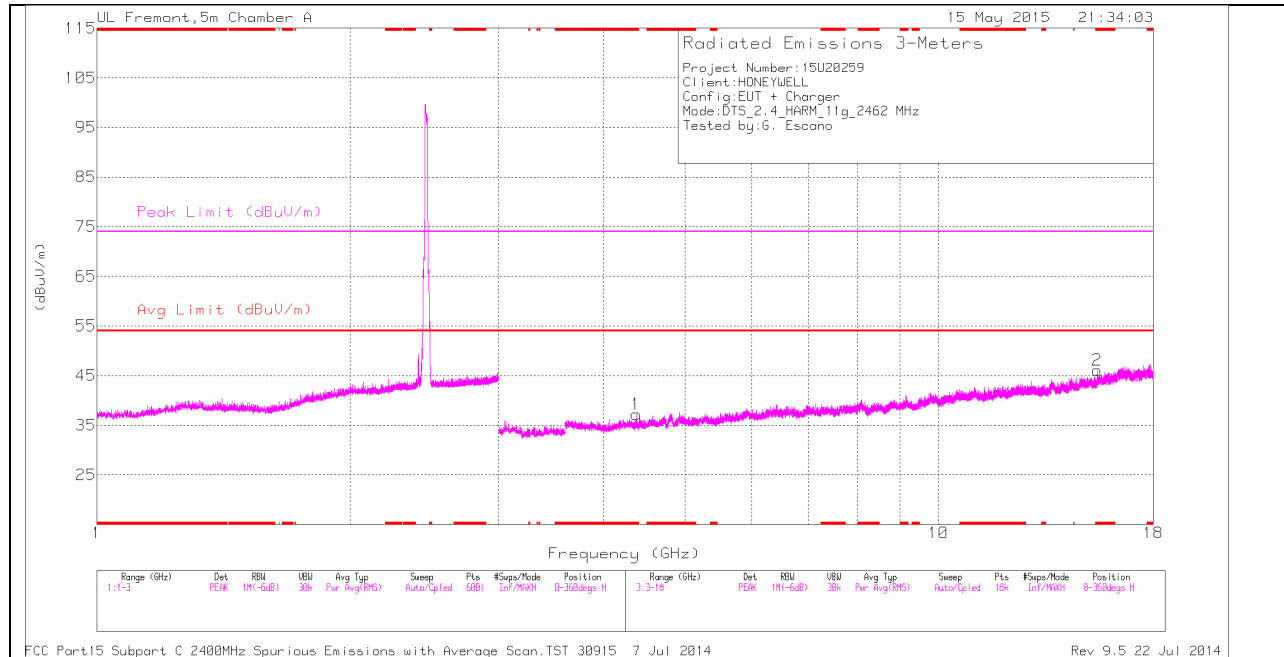
PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.547	42.15	PK2	33.9	-31.1	0	44.95	-	-	74	-29.05	231	230	H
* 4.55	30.23	MAV1	33.9	-31.1	.23	33.26	54	-20.74	-	-	231	230	H
* 4.387	42.28	PK2	33.7	-32.2	0	43.78	-	-	74	-30.22	109	111	V
* 4.386	30.75	MAV1	33.7	-32.2	.23	32.48	54	-21.52	-	-	109	111	V

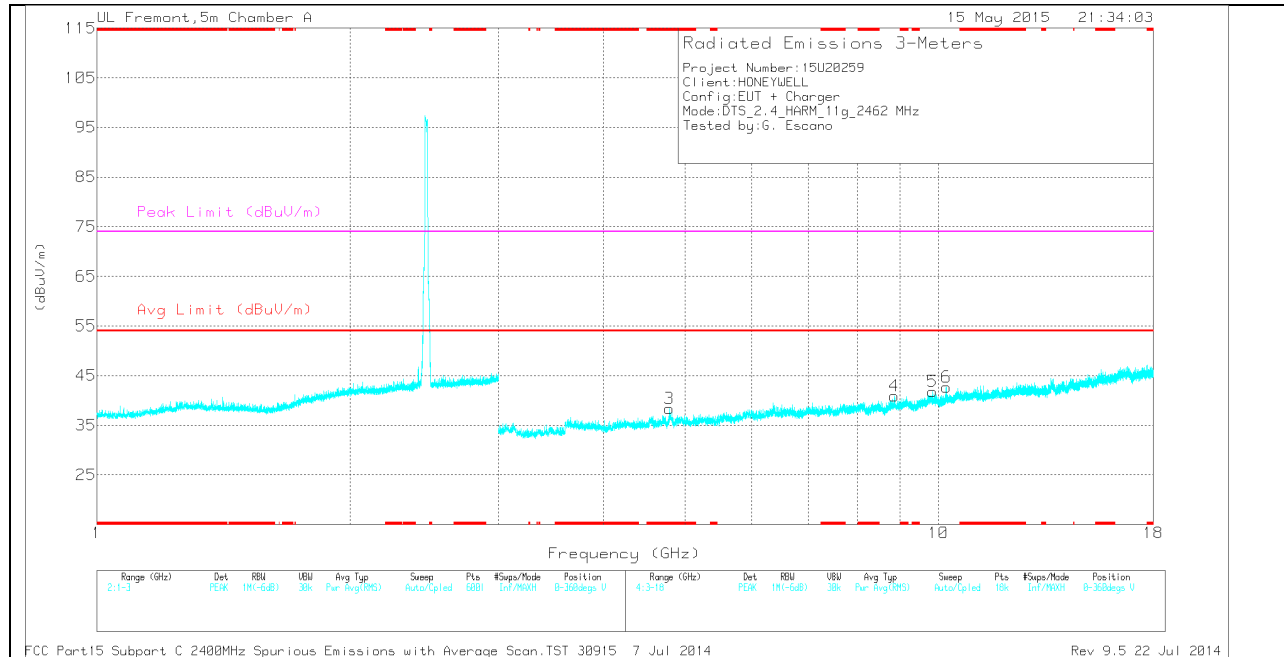
FCC Part15 Subpart C T186 2400MHz Spurious Emissions.TST 12746Rev 9.5 12 Jun 2013

HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Ftr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.375	35.88	PK	33.6	-32.2	0	37.28	-	-	74	-36.72	0-360	100	H
2	* 15.434	29.26	PK	40.2	-23.4	0	46.06	-	-	74	-27.94	0-360	100	H
3	* 4.791	35.72	PK	34	-31.3	0	38.42	-	-	74	-35.58	0-360	100	V
4	8.866	29.16	PK	36	-24.3	0	40.86	-	-	-	-	0-360	201	V
5	9.848	28.41	PK	37	-23.6	0	41.81	-	-	-	-	0-360	201	V
6	10.22	29.13	PK	37.2	-23.6	0	42.73	-	-	-	-	0-360	100	V

PK - Peak detector

RADIATED EMISSIONS

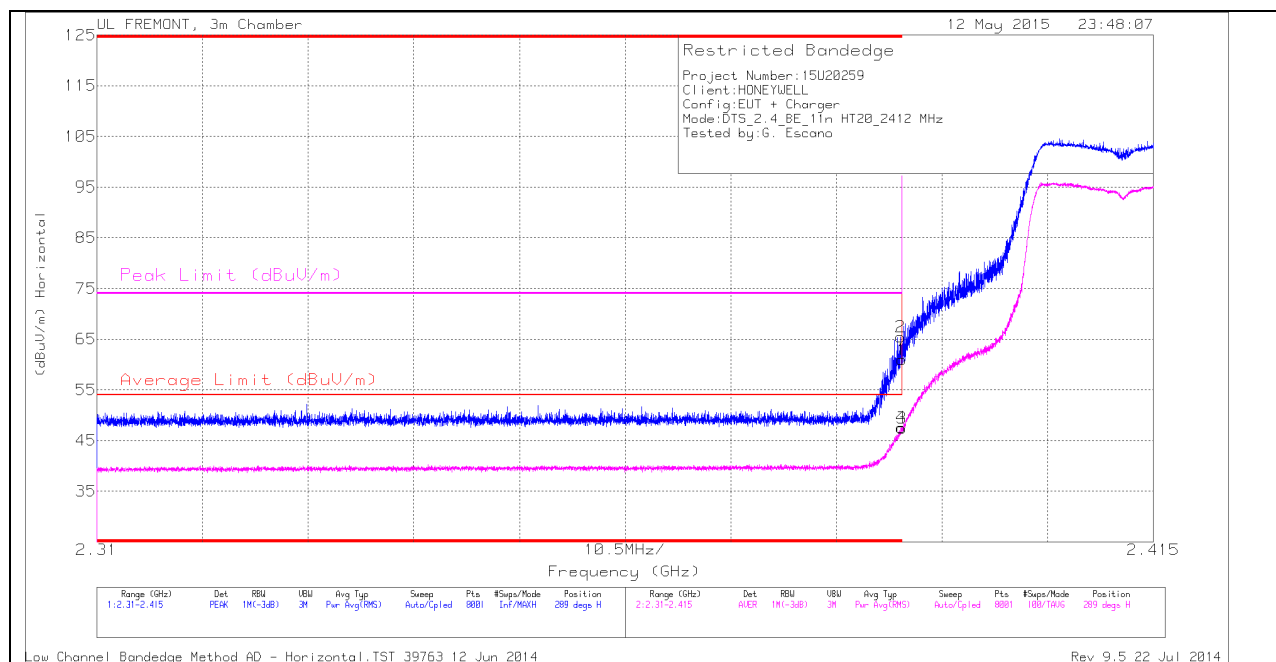
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Ftr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.375	42.37	PK2	33.6	-32.2	0	43.77	-	-	74	-30.23	71	219	H
* 4.376	30.7	MAV1	33.6	-32.2	.23	32.33	54	-21.67	-	-	71	219	H
* 15.434	36.24	PK2	40.2	-23.4	0	53.04	-	-	74	-20.96	230	143	H
* 15.433	24.1	MAV1	40.2	-23.4	.23	41.13	54	-12.87	-	-	230	143	H
* 4.792	41.83	PK2	34	-31.3	0	44.53	-	-	74	-29.47	60	341	V
* 4.792	30.32	MAV1	34	-31.3	.23	33.25	54	-20.75	-	-	60	341	V

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10.2.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

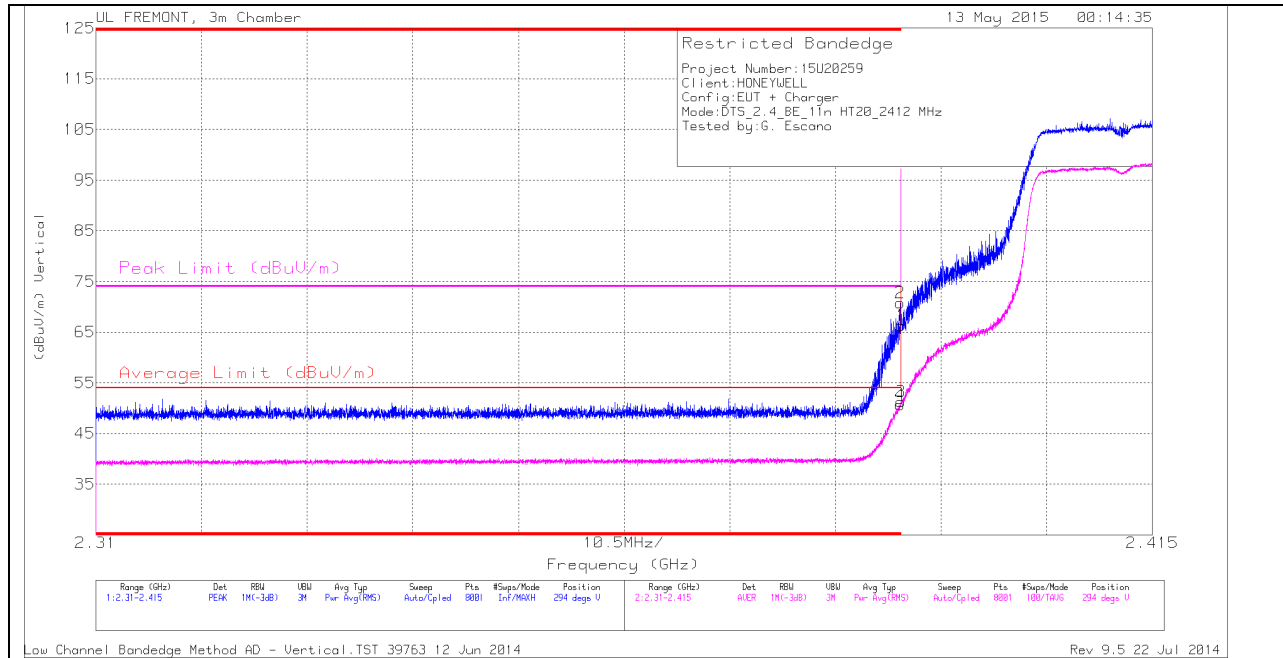
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filt r/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	52.05	PK	32	-23.1	0	60.95	-	-	74	-13.05	289	324	H
2	* 2.39	56.55	PK	32	-23.1	0	65.45	-	-	74	-8.55	289	324	H
3	* 2.39	38.26	RMS	32	-23.1	.24	47.4	54	-6.6	-	-	289	324	H
4	* 2.39	38.44	RMS	32	-23.1	.24	47.58	54	-6.42	-	-	289	324	H

VERTICAL PEAK AND AVERAGE PLOT

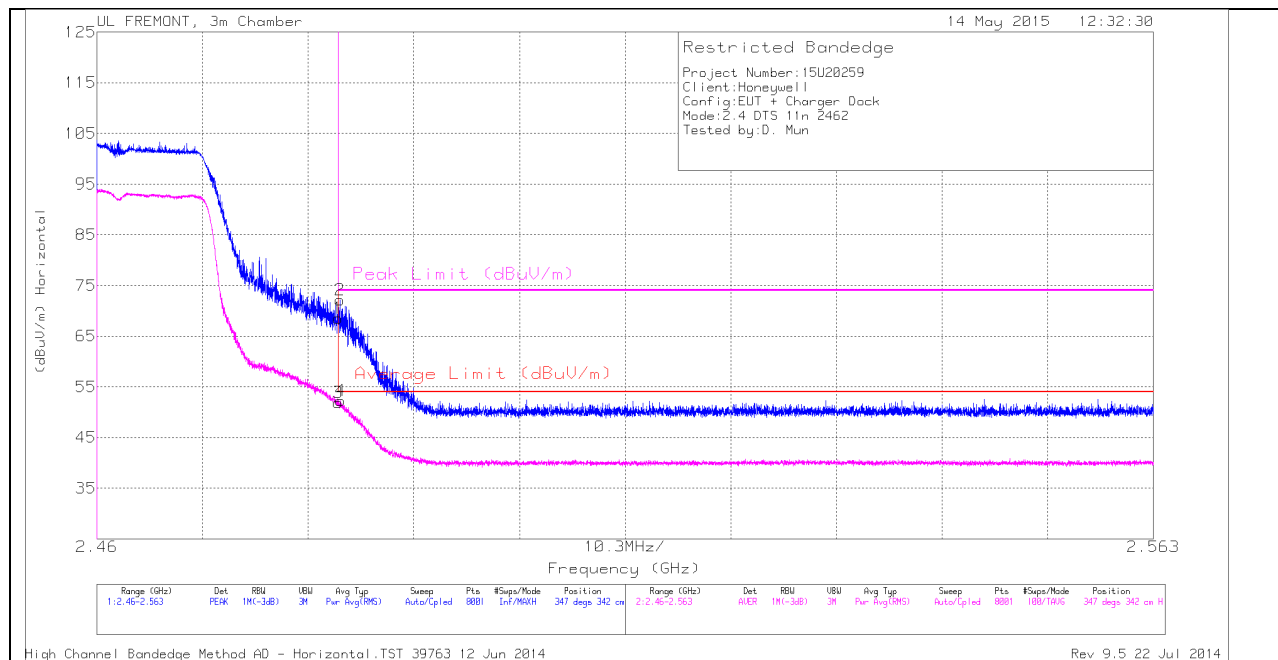


VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cb/Filter/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	57.43	PK	32	-23.1	0	66.33	-	-	74	-7.67	294	343	V
2	* 2.39	61.88	PK	32	-23.1	0	70.78	-	-	74	-3.22	294	343	V
3	* 2.39	42.1	RMS	32	-23.1	.24	51.24	54	-2.76	-	-	294	343	V
4	* 2.39	41.58	RMS	32	-23.1	.24	50.72	54	-3.28	-	-	294	343	V

AUTHORIZED BANDEDGE (HIGH CHANNEL)

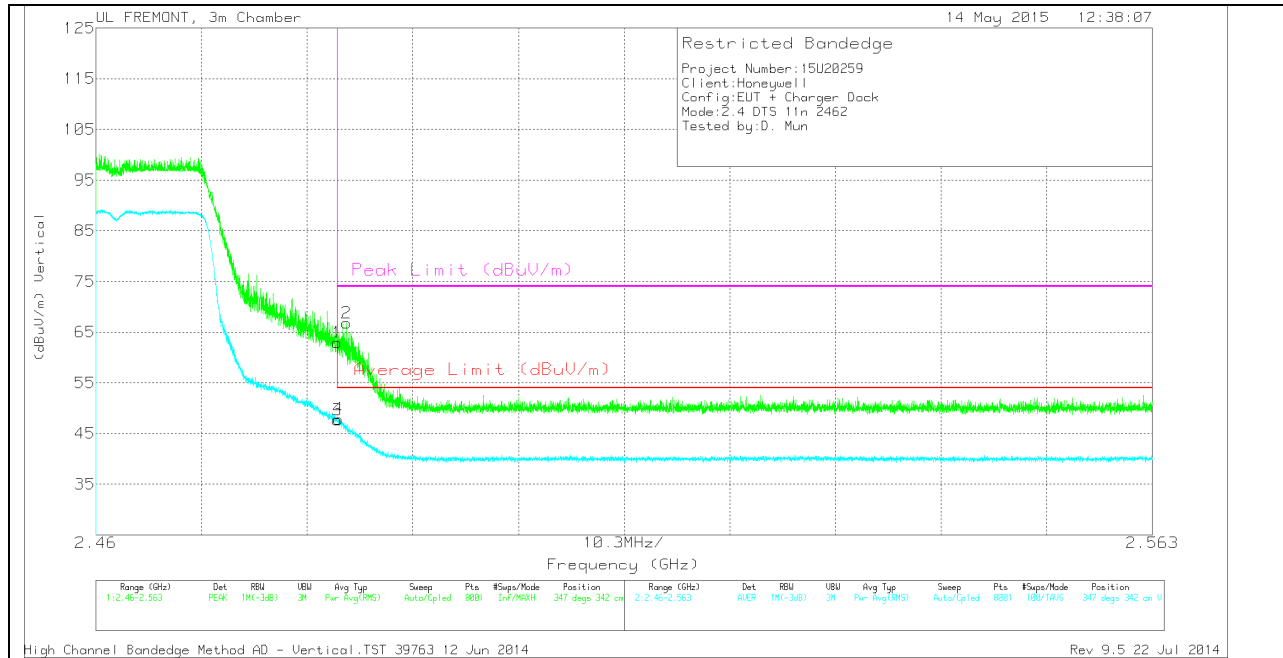
HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	59.02	PK	32.3	-22.8	68.52	-	-	74	-5.48	347	342	H
2	2.484	62.61	PK	32.3	-22.8	72.11	-	-	74	-1.89	347	342	H
3	2.484	42.46	RMS	32.3	-22.8	51.96	54	-2.04	-	-	347	342	H
4	2.484	42.78	RMS	32.3	-22.8	52.28	54	-1.72	-	-	347	342	H

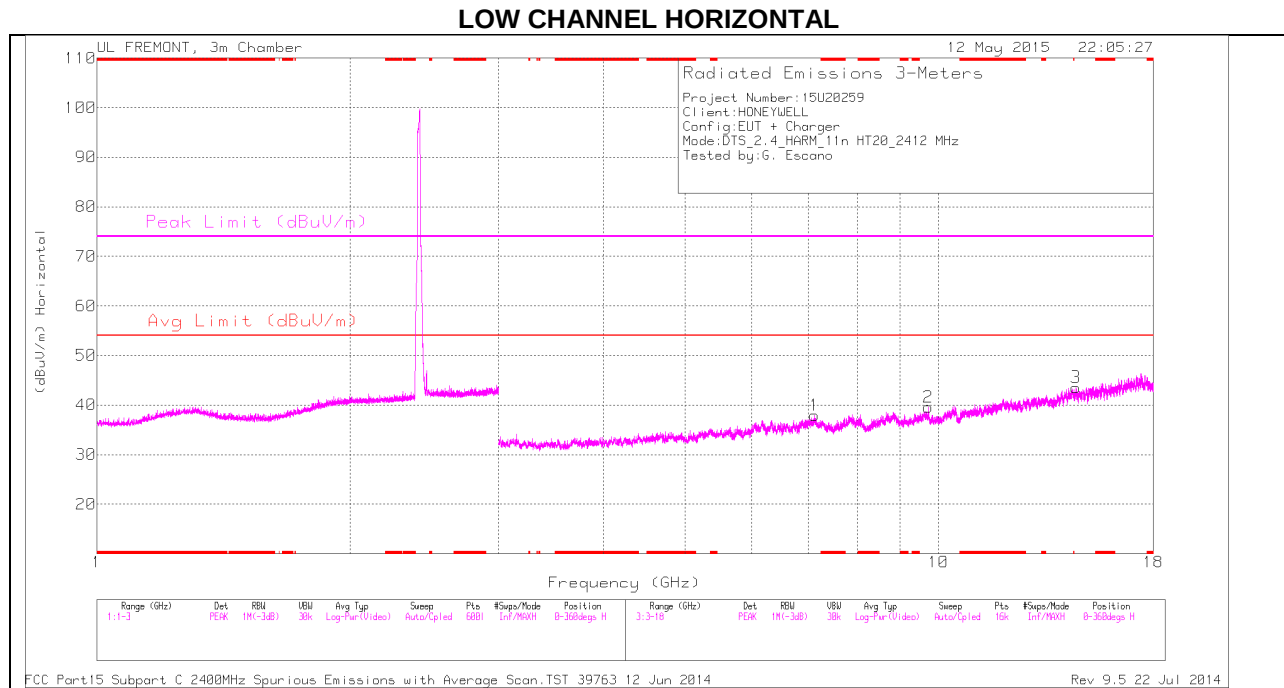
VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

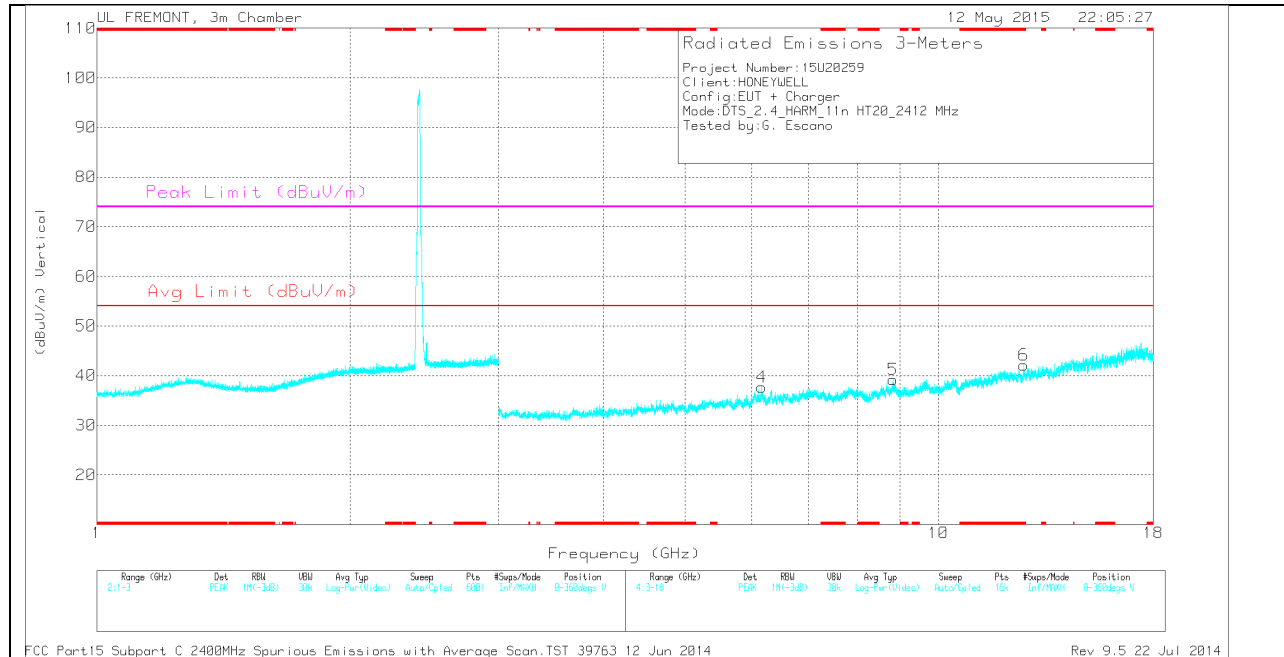
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	53.48	PK	32.3	-22.8	62.98	-	-	74	-11.02	347	342	V
2	2.484	57.35	PK	32.3	-22.8	66.85	-	-	74	-7.15	347	342	V
3	2.484	38.18	RMS	32.3	-22.8	47.68	54	-6.32	-	-	347	342	V
4	2.484	38.37	RMS	32.3	-22.8	47.87	54	-6.13	-	-	347	342	V

HARMONICS AND SPURIOUS EMISSIONS



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	* 12.634	29.53	PK	39.1	-26.5	0	42.13	-	-	74	-31.87	0-360	100	V
4	6.168	32.09	PK	35.3	-29.7	0	37.69	-	-	-	-	0-360	100	V
1	7.128	30.47	PK	35.6	-28.1	0	37.97	-	-	-	-	0-360	100	H
5	8.837	29.95	PK	35.9	-26.6	0	39.25	-	-	-	-	0-360	100	V
2	9.721	28.34	PK	36.8	-25.5	0	39.64	-	-	-	-	0-360	100	H
3	14.559	31.08	PK	39.8	-27.3	0	43.58	-	-	-	-	0-360	200	H

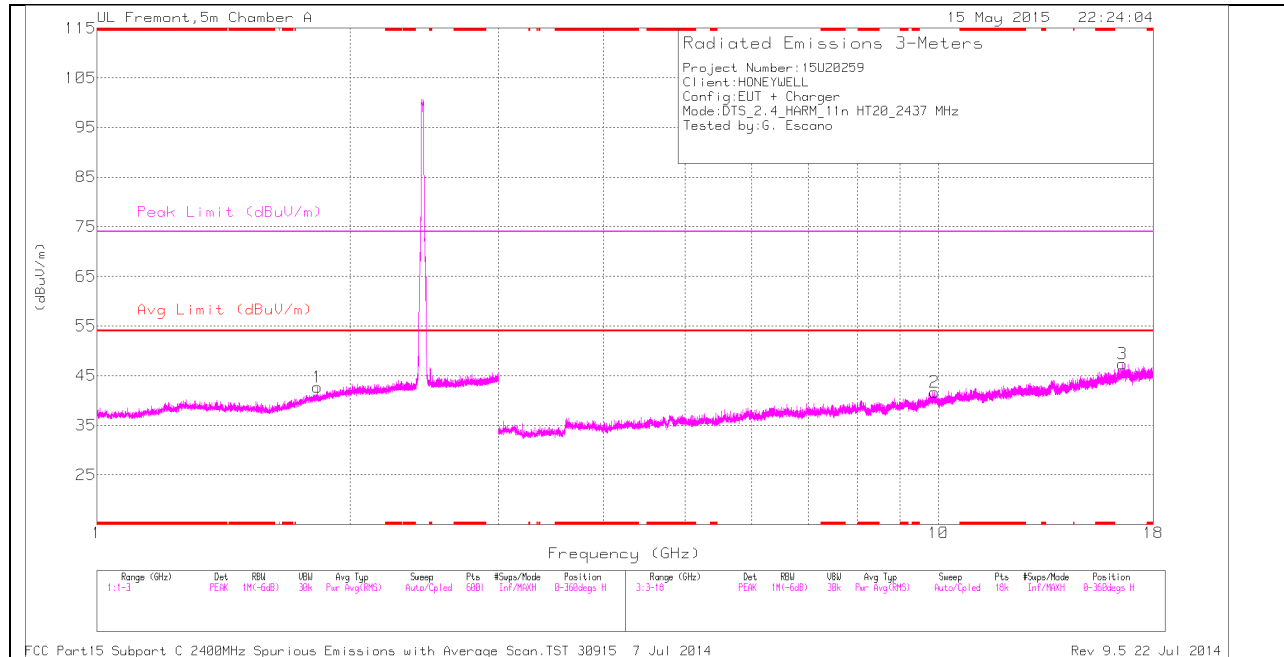
PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 12.632	38.46	PK2	39.1	-26.5	0	51.06	-	-	74	-22.94	339	400	V
* 12.632	26.44	MAV1	39.1	-26.5	.24	39.28	54	-14.72	-	-	339	400	V

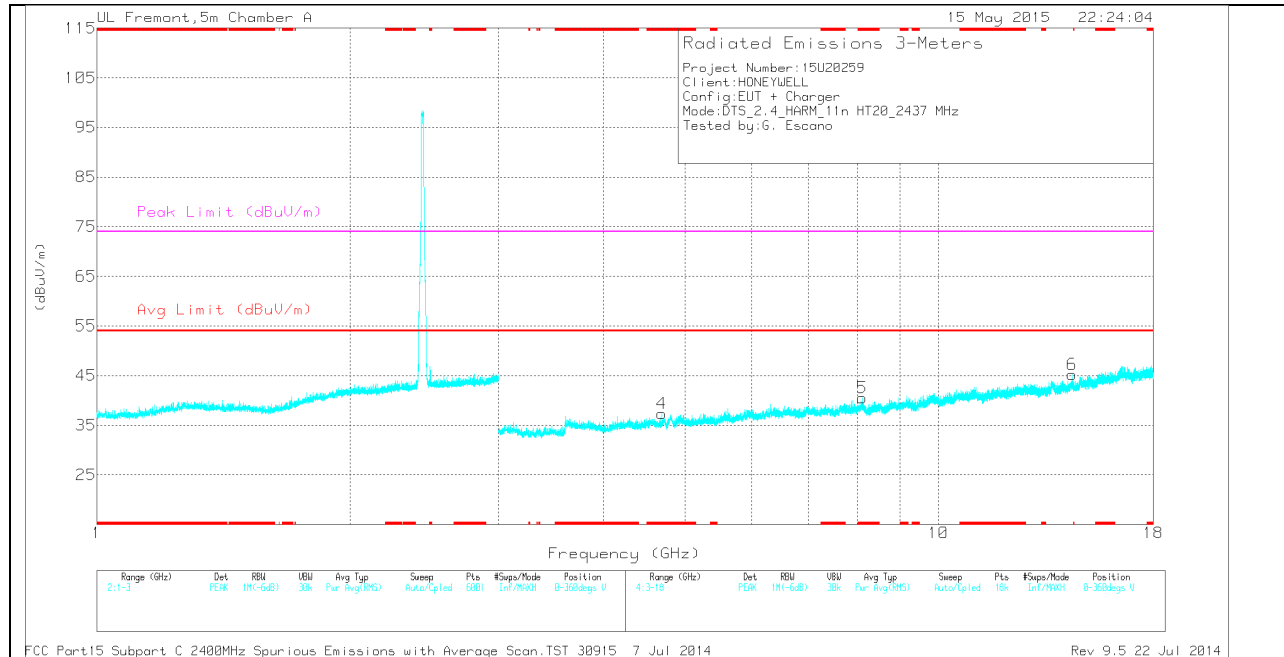
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MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 4.692	34.99	PK	34.1	-31.7	0	37.39	-	-	74	-36.61	0-360	100	V
5	* 8.111	29.45	PK	35.7	-24.6	0	40.55	-	-	74	-33.45	0-360	100	V
1	1.828	37.96	PK	30.2	-25.5	0	42.66	-	-	-	-	0-360	100	H
2	9.896	28.11	PK	37	-23.4	0	41.71	-	-	-	-	0-360	100	H
6	14.417	28.62	PK	39.2	-22.6	0	45.22	-	-	-	-	0-360	100	V
3	16.538	28.73	PK	41.6	-22.9	0	47.43	-	-	-	-	0-360	201	H

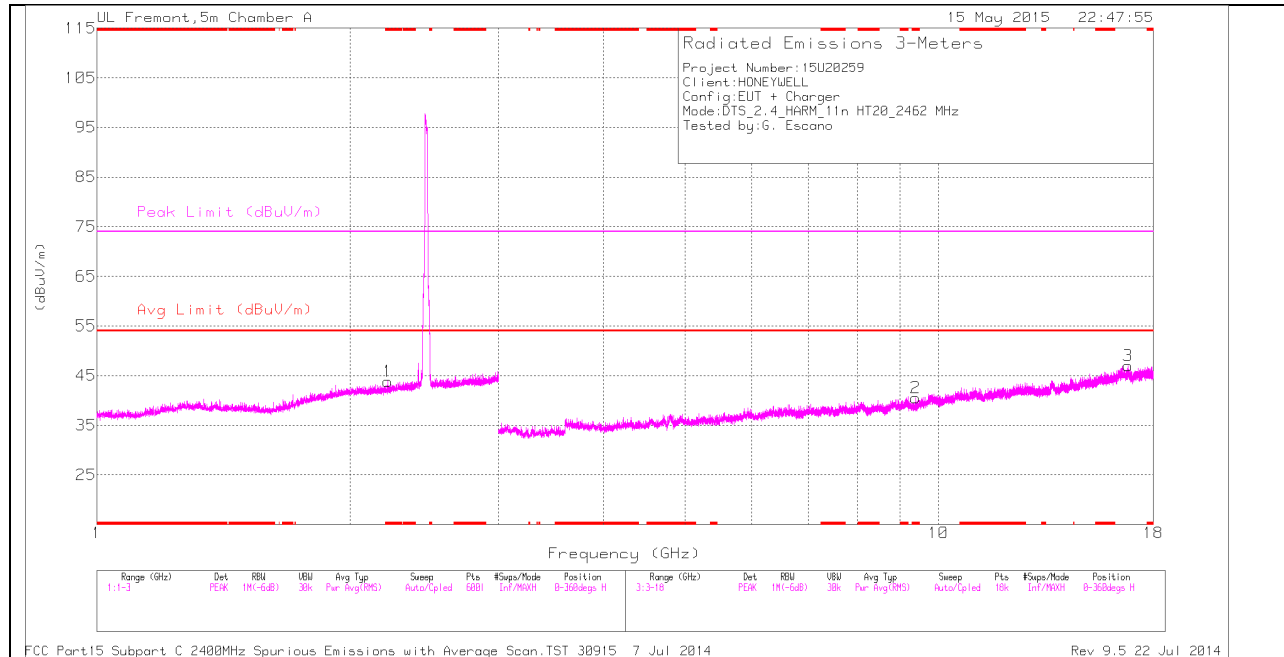
PK - Peak detector

RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.692	41.88	PK2	34.1	-31.7	0	44.28	-	-	74	-29.72	324	324	V
* 4.692	30.11	MAV1	34.1	-31.7	.24	32.75	54	-21.25	-	-	324	324	V
* 8.112	36.75	PK2	35.7	-24.6	0	47.85	-	-	74	-26.15	316	378	V
* 8.112	24.72	MAV1	35.7	-24.6	.24	36.06	54	-17.94	-	-	316	378	V

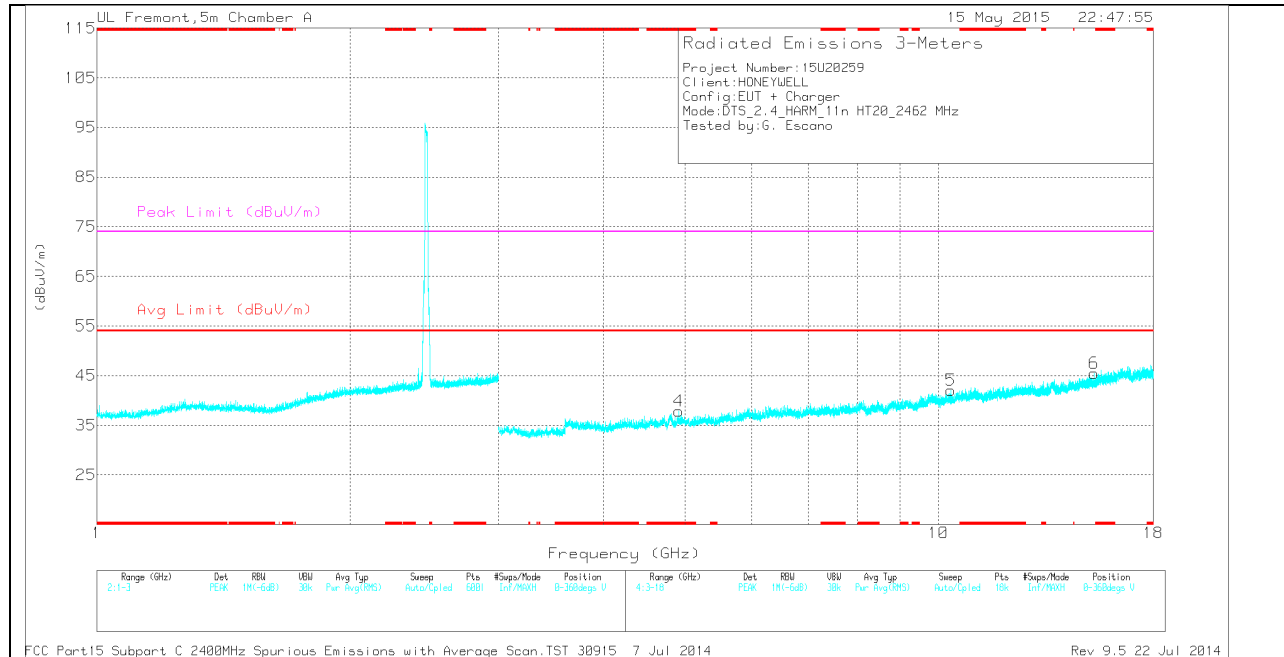
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HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.215	37.51	PK	31.4	-25.1	0	43.81	-	-	74	-30.19	0-360	201	H
2	* 9.397	29.31	PK	36.4	-25.2	0	40.51	-	-	74	-33.49	0-360	100	H
4	* 4.912	33.57	PK	33.9	-29.6	0	37.87	-	-	74	-36.13	0-360	201	V
5	10.345	28.3	PK	37.4	-23.7	0	42	-	-	-	-	0-360	100	V
6	15.301	28.72	PK	40	-23.3	0	45.42	-	-	-	-	0-360	201	V
3	16.786	28.63	PK	41.8	-23.4	0	47.03	-	-	-	-	0-360	201	H

PK - Peak detector

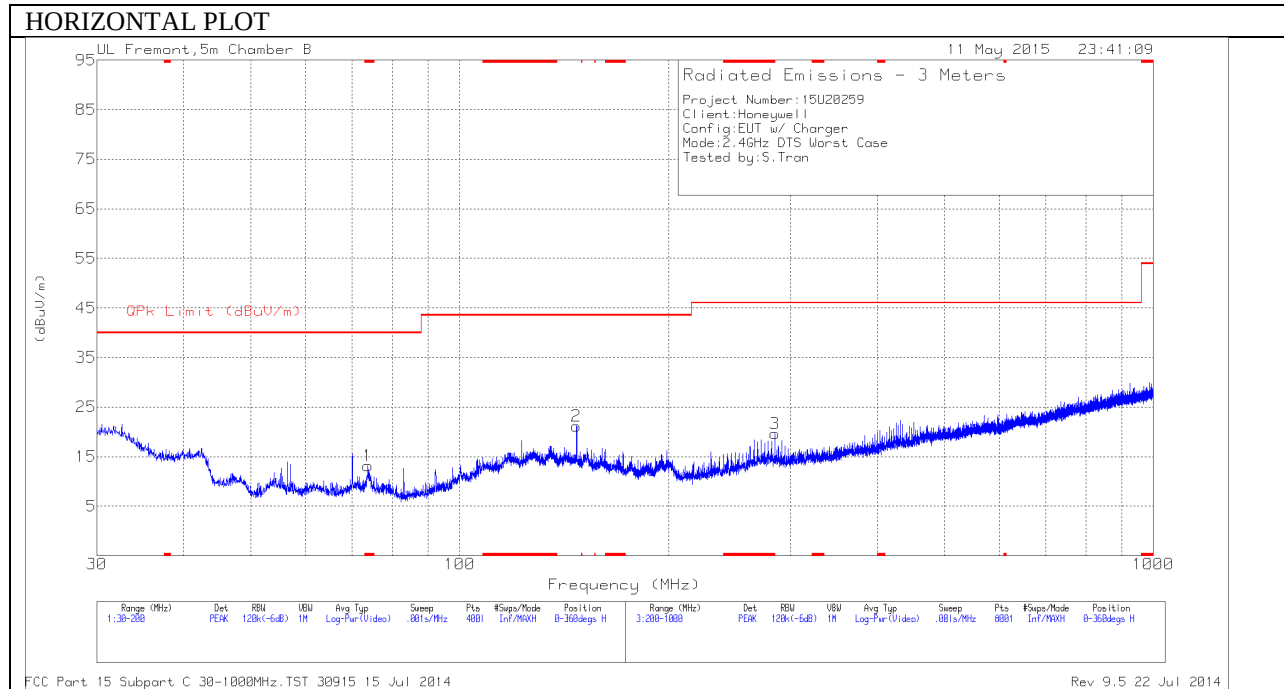
RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.216	44.35	PK2	31.4	-25.1	0	50.65	-	-	74	-23.35	324	385	H
* 2.215	32.56	MAV1	31.4	-25.1	.24	39.1	54	-14.9	-	-	324	385	H
* 9.395	36.12	PK2	36.4	-25.2	0	47.32	-	-	74	-26.68	130	280	H
* 9.395	24.38	MAV1	36.4	-25.2	.24	35.82	54	-18.18	-	-	130	280	H
* 4.913	41.09	PK2	33.9	-29.6	0	45.39	-	-	74	-28.61	190	156	V
* 4.912	28.68	MAV1	33.9	-29.6	.24	33.22	54	-20.78	-	-	190	156	V

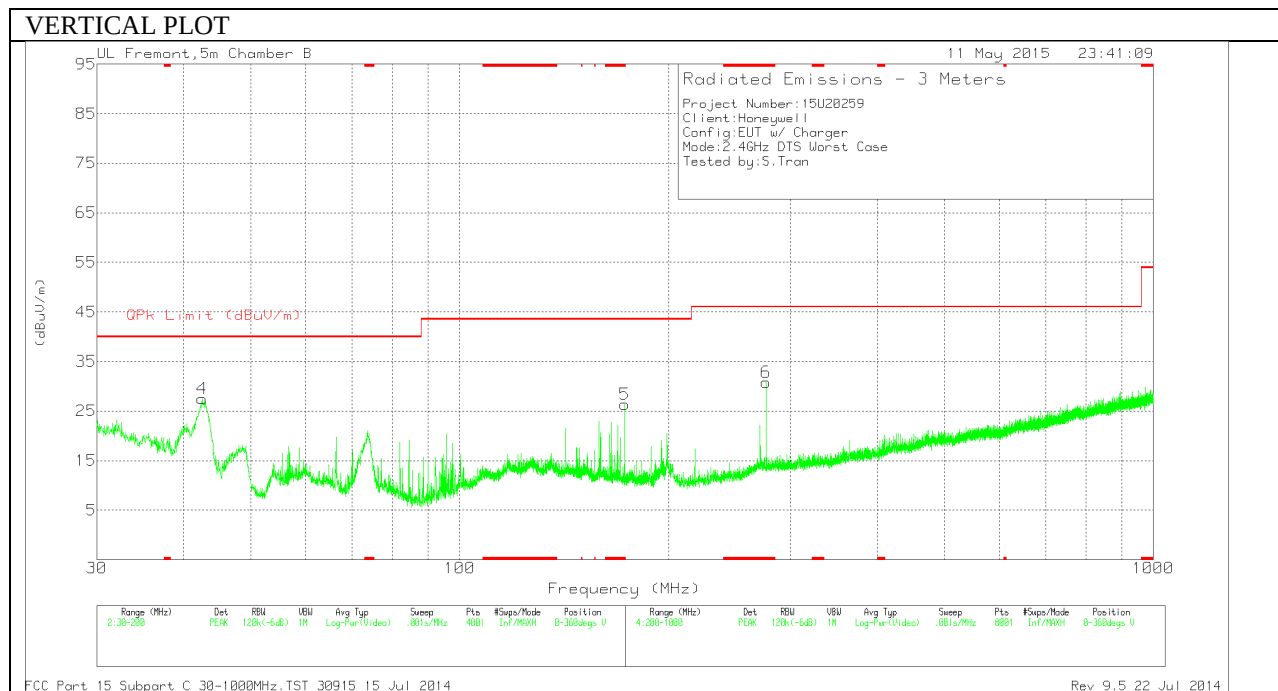
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10.3. WORST-CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)



Below 1G Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 73.775	33.56	PK	8	-28.4	13.16	40	-26.84	0-360	100	H
5	* 172.885	42.07	PK	11.5	-27.2	26.37	43.52	-17.15	0-360	100	V
3	* 284.8	32.3	PK	13.4	-26.1	19.6	46.02	-26.42	0-360	101	H
6	* 276.4	43.49	PK	13.5	-26.2	30.79	46.02	-15.23	0-360	200	V
4	42.5375	43.95	PK	12.2	-28.7	27.45	40	-12.55	0-360	100	V
2	147.4275	36.06	PK	12.6	-27.5	21.16	43.52	-22.36	0-360	200	H

11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 [*]	56 to 46 [*]
0.5-5	56	46
5-30	60	50

^{*} Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4 2009.

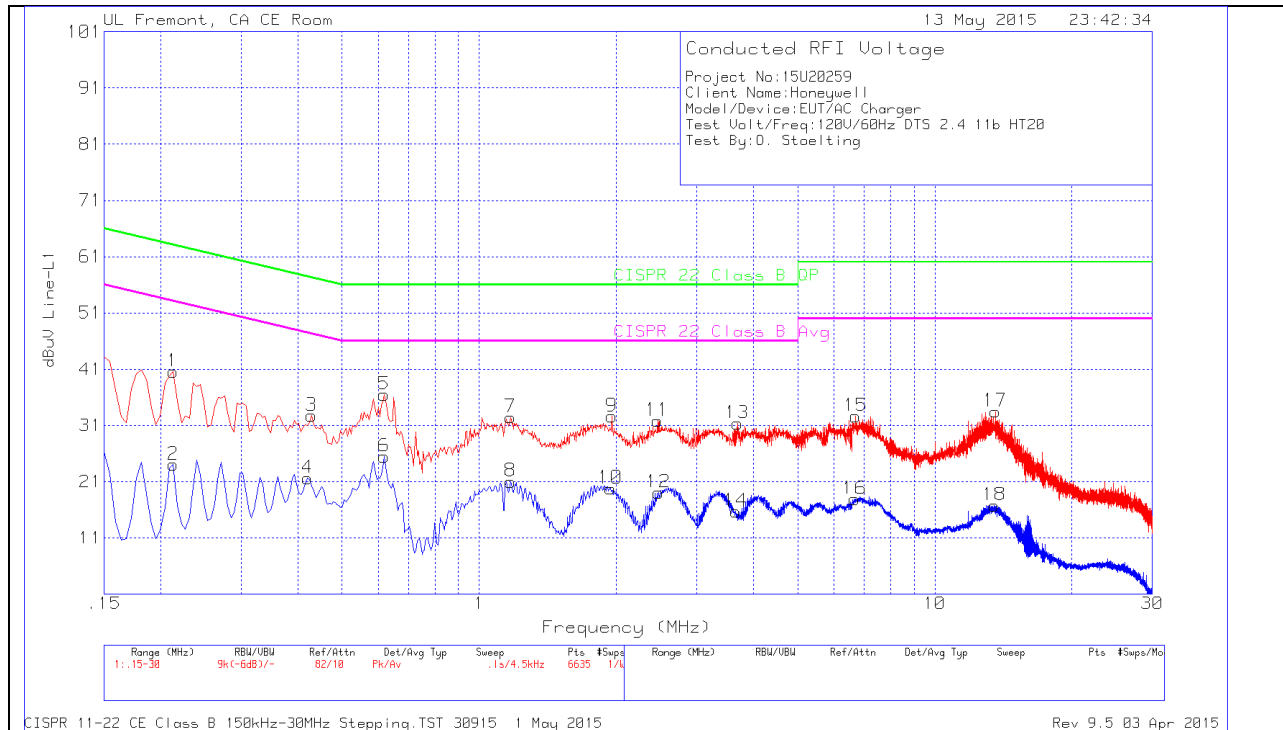
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

6 WORST EMISSIONS

LINE 1 PLOT

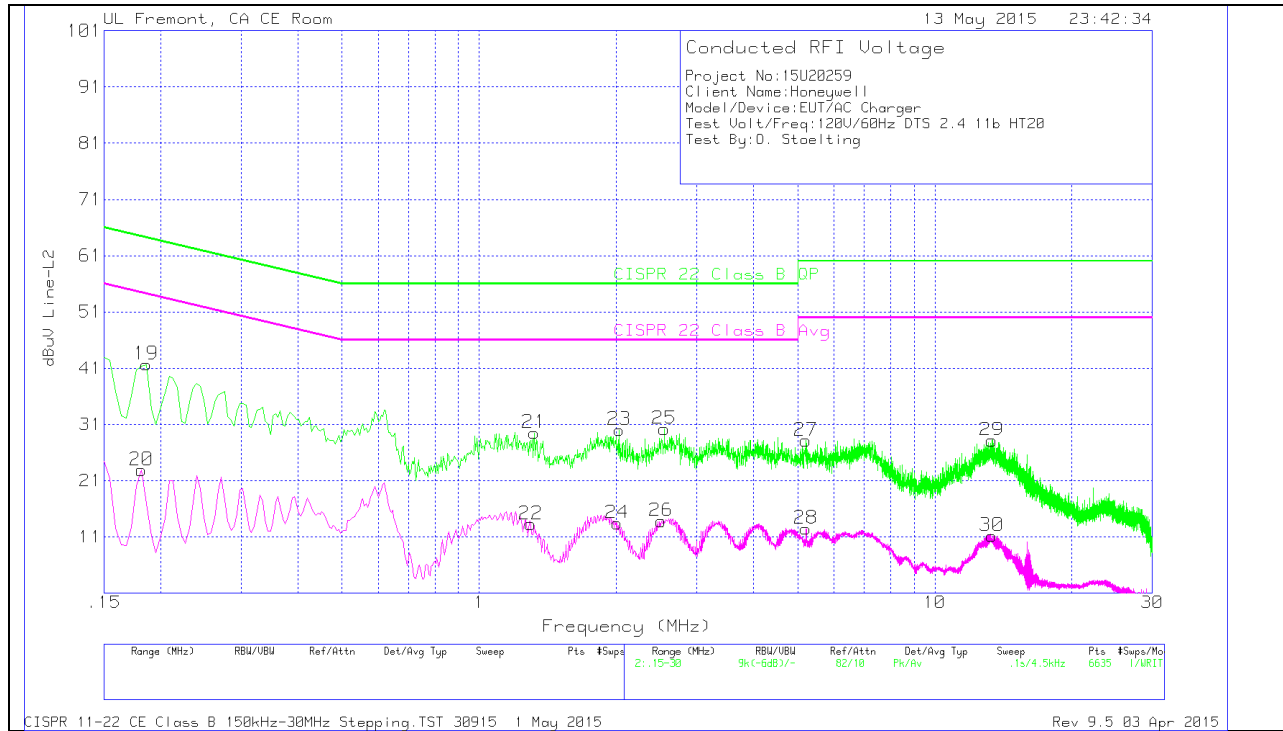


LINE 1 RESULTS

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.213	39.66	Pk	.9	0	40.56	63.09	-22.53	53.09	-12.53
2	.213	23.12	Av	.9	0	24.02	-	-	53.09	-29.07
3	.429	32.33	Pk	.4	0	32.73	57.27	-24.54	47.27	-14.54
4	.42	21.2	Av	.4	0	21.6	-	-	47.45	-25.85
5	.618	36.17	Pk	.3	0	36.47	56	-19.53	46	-9.53
6	.618	25.17	Av	.3	0	25.47	-	-	46	-20.53
7	1.1715	32.15	Pk	.2	.1	32.45	56	-23.55	46	-13.55
8	1.1715	20.73	Av	.2	.1	21.03	-	-	46	-24.97
9	1.9545	32.31	Pk	.2	.1	32.61	56	-23.39	46	-13.39
10	1.941	19.48	Av	.2	.1	19.78	-	-	46	-26.22
11	2.463	31.52	Pk	.2	.1	31.82	56	-24.18	46	-14.18
12	2.4765	18.76	Av	.2	.1	19.06	-	-	46	-26.94
13	3.687	31.04	Pk	.2	.1	31.34	56	-24.66	46	-14.66
14	3.6555	15.4	Av	.2	.1	15.7	-	-	46	-30.3
15	6.702	32.32	Pk	.2	.1	32.62	60	-27.38	50	-17.38
16	6.6705	17.59	Av	.2	.1	17.89	-	-	50	-32.11
17	13.578	33.07	Pk	.2	.2	33.47	60	-26.53	50	-16.53
18	13.5105	16.39	Av	.2	.2	16.79	-	-	50	-33.21

LINE 2 PLOT



LINE 2 RESULTS

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
19	.186	40.57	Pk	1.1	0	41.67	64.21	-22.54	54.21	-12.54
20	.1815	21.67	Av	1.2	0	22.87	-	-	54.42	-31.55
21	1.32	29.2	Pk	.2	.1	29.5	56	-26.5	46	-16.5
22	1.2975	12.97	Av	.2	.1	13.27	-	-	46	-32.73
23	2.031	29.72	Pk	.2	.1	30.02	56	-25.98	46	-15.98
24	2.0085	13.13	Av	.2	.1	13.43	-	-	46	-32.57
25	2.5485	29.9	Pk	.2	.1	30.2	56	-25.8	46	-15.8
26	2.508	13.52	Av	.2	.1	13.82	-	-	46	-32.18
27	5.2125	27.81	Pk	.2	.1	28.11	60	-31.89	50	-21.89
28	5.2125	12.17	Av	.2	.1	12.47	-	-	50	-37.53
29	13.3395	27.75	Pk	.2	.2	28.15	60	-31.85	50	-21.85
30	13.3395	10.78	Av	.2	.2	11.18	-	-	50	-38.82